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Vol. 29, No. 6 *PSYCHOLOGICAL REVIEW PUBLICATIONS* June, 1932

Psychological Bulletin

EDITED BY

EDWARD S. ROBINSON, YALE UNIVERSITY

HOWARD C. WARREN, PRINCETON UNIVERSITY (*Review*)
SAMUEL W. FERNBERGER, UNIV. OF PENNSYLVANIA (*J. Exper. Psychol.*)
WALTER S. HUNTER, CLARK UNIVERSITY (*Index*)
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CONTENTS

PROCEEDINGS OF THE TWENTY-SEVENTH ANNUAL MEETING OF THE SOUTHERN SOCIETY FOR PHILOSOPHY AND PSYCHOLOGY

Special Reviews: 401.

Books Received: 459.

Notes and News: 460.

PUBLISHED MONTHLY (EXCEPT AUGUST AND SEPTEMBER)

FOR THE AMERICAN PSYCHOLOGICAL ASSOCIATION

BY THE PSYCHOLOGICAL REVIEW COMPANY

PRINCETON, N. J.

Entered as second-class matter at the post-office at Princeton, N. J., with an additional entry at Albany, N. Y.

Publications of the American Psychological Association

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HENRY T. MOORE, SKIDMORE COLLEGE (*J. Abn. and Soc. Psychol.*)
HERBERT S. LANGFELD, PRINCETON UNIVERSITY (*Monographs*)
EDWARD S. ROBINSON, YALE UNIVERSITY (*Bulletin*)

HERBERT S. LANGFELD, Business Editor

PSYCHOLOGICAL REVIEW

containing original contributions only, appears bi-monthly, January, March, May, July, September, and November, the six numbers comprising a volume of about 540 pages.

PSYCHOLOGICAL BULLETIN

containing critical reviews of books and articles, psychological news and notes, university notices, and announcements, appears monthly (10 numbers), the annual volume comprising about 720 pages. Special issues of the BULLETIN consist of general reviews of recent work in some department of psychology.

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containing original contributions of an experimental character, appears bi-monthly, February, April, June, August, October, and December, the six numbers comprising a volume of about 700 pages (from Jan. 1, 1932).

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is a compendious bibliography of books, monographs, and articles upon psychological and cognate topics that have appeared during the year. The INDEX is issued annually in June, and may be subscribed for in connection with the periodicals above, or purchased separately.

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Review, Bulletin, J. Exper., and Index: $19.00 (Foreign, $19.75).

Subscriptions, orders, and business communications should be sent to the

PSYCHOLOGICAL REVIEW COMPANY

PRINCETON, N. J.

Vol. 29, No. 6 June, 1932

THE

PSYCHOLOGICAL BULLETIN

PROCEEDINGS OF THE TWENTY-SEVENTH ANNUAL MEETING OF THE SOUTHERN SOCIETY FOR PHILOSOPHY AND PSYCHOLOGY, NEW ORLEANS, LOUISIANA, DECEMBER, 29, 30, 31, 1931

REPORT OF THE SECRETARY, LYLE H. LANIER,
VANDERBILT UNIVERSITY

The Southern Society for Philosophy and Psychology held its twenty-seventh annual meeting on December 29, 30, 31, 1931, in New Orleans, in joint session with Section I, Psychology, of the American Association for the Advancement of Science. These organizations were guests of Tulane University.

The joint program consisted of five formal sessions, in which thirty-five papers were read. All sessions were held in the Auditorium of the Hotel Monteleone, the headquarters of the Society. The papers were grouped according to subject-matter as follows: Tuesday morning, learning and memory, 7 papers; Tuesday afternoon, mainly sensory and perceptual phenomena, 7 papers; Wednesday morning, psychological theory and philosophy, 7 papers; Wednesday afternoon, child development and mental measurement, 8 papers; Thursday morning, abnormal mental phenomena and emotion, 6 papers.

The meeting of the Council was held on Monday evening in the Hotel Monteleone. The annual business meeting followed the Wednesday morning session (11:45 A.M.). The annual banquet was held on Wednesday evening at the Hotel Bienville. This was followed by the Presidential Address of Dr. H. M. Johnson, entitled "Some Follies of Emancipated Psychology." Many members of the Southern Society attended also the banquet of Sections I and Q, A.A.A.S., on Tuesday evening, after which the addresses of the retiring Vice-Presidents of these sections were given. The address of Dr. E. G. Boring, retiring vice-president of Section I, Psychology,

was entitled "The Physiology of Consciousness" (published in *Science*, Jan. 8, 1932).

Minutes of the Annual Business Meeting

President Johnson suggested that the reading of the minutes of the Charlottesville meeting be omitted, since printed copies had been distributed to each member. The minutes were approved as printed.

Upon Council recommendation, it was voted to continue the Committee on the Teaching of Philosophy. The members of the committee are, Dr. H. C. Sanborn, Chairman, Dr. A. G. A. Balz, and Dr. Josiah Morse. The committee reported no work done, since no notice of appointment had been sent to the chairman.

It was voted, upon Council recommendation, to continue the Committee on the Teaching of Psychology, with the following members: Dr. P. F. Finner, Chairman, Dr. R. M. Dorcus, and Dr. T. K. Sisk. Dr. Finner requested instructions from the Society as to the procedure which this committee should adopt. He suggested that the committee might be enlarged to include a member in each state, and the scope of the work expanded to include the investigation of library and laboratory facilities for psychological work in southern colleges. No definite recommendations were voted, the procedure being left to the committee.

No formal report was presented from the Program Committee nor from the Committee on Teaching the First Course in Psychology. The Budget Committee has not been constituted.

The Secretary outlined the work done in revising the membership list. Twelve payments of two years' arrears, five payments of one year's arrears, nine resignations and one death were announced. Twenty-seven members are in arrears one year or more, and will accordingly be dropped from the rolls of the Society.

Inasmuch as no report of the retiring treasurer, Dr. Boynton, for the period April 2 to September 30, 1931, was received by the Council, it was recommended that he be requested to prepare such a report and present it to an auditing committee appointed by the Council. The members of this committee are Dr. Joseph Peterson, Chairman, Dr. S. C. Garrison, and the Secretary.

The Council announced that the present treasurer's report had been received. Inasmuch as insufficient records for an audit were at hand, the Council appointed Dr. Joseph Peterson auditor for the term of the present treasurer, with the request that he audit the treasurer's records both at the end of the present fiscal year and immediately before the Washington meeting in 1933.

The proposed amendments to Article II of the constitution, as printed in the minutes of the Charlottesville meeting, were passed. The Council had first recommended these changes at the 1930 meeting in Nashville.

The Council proposed that Article II, Section 3, of the constitution be amended to read: "There shall be an annual membership fee of $1.50. Failure in the payment of the fee shall cause membership to cease after one year, the fiscal year running from meeting to meeting."

Upon motion duly made and seconded, it was voted that the Secretary prepare resolutions on the death of Dr. Jasper C. Barnes and that a copy be sent to Mrs. Barnes.

Upon Council recommendation, the following officers were elected: Dr. Anna Forbes Liddell, Florida State College for Women, President; to the Council, Dr. H. C. Sanborn, Vanderbilt University, and J. F. Dashiell, University of North Carolina.

It was voted to accept the invitation of American University to hold the 1933 meeting in Washington, D. C. The meeting will be held on April 14 and 15, 1933.

The following new members were elected, upon Council recommendation:

Allison, L. W., State Teachers College, Jacksonville, Ala.
Andrews, Elizabeth G., Florida State College for Women, Tallahassee, Fla.
Barkley, K. L., North Carolina College for Women, Greensboro, N. C.
Bathhurst, J. E., Birmingham-Southern College, Birmingham, Ala.
Bentley, John E., American University, Washington, D. C.
Bradfield, Stella, Winthrop College, Rock Hill, S. C.
Bugg, Eugene, Vanderbilt University, Nashville, Tenn.
Bunch, C. C., Washington University, St. Louis, Mo.
Bunch, M. E., Washington University, St. Louis, Mo.
Burlingame, Mildred, Florida State College for Women, Tallahassee, Fla.
Collier, Frank Wilbur, American University, Washington, D. C.
Coxwell, Laura, 2793 Lydia St., Jacksonville, Fla.
Demiaschkevitsch, Michael, Peabody College, Nashville, Tenn.
Edds, J. H., Milligan College, Milligan, Tenn.
Eigler, Pauline, Johns Hopkins University, Baltimore, Md.
Enwall, H. O., University of Florida, Gainesville, Fla.
Gentry, Evelyn, Johns Hopkins University, Baltimore, Md.
Gray, Wendell, Johns Hopkins University, Baltimore, Md.
Greene, J. E., University of Georgia, Athens, Ga.
Hammond, Lewis M., University of Virginia, University, Va.
Hart, Joseph K., Vanderbilt University, Nashville, Tenn.

Lee, Harold N., Tulane University, New Orleans, La.
Leeper, Robert, University of Arkansas, Fayetteville, Ark.
Lentz, T. F., Washington University, St. Louis, Mo.
McKinney, Fred, University of Missouri, Columbia, Mo.
Mahan, W. B., University of Arkansas, Fayetteville, Ark.
Mayo, M. J., Harris Teachers College, St. Louis, Mo.
Meltzer, Hyman, Psychiatric Clinic, St. Louis, Mo.
Morsh, Joseph, Johns Hopkins University, Baltimore, Md.
Moss, F. A., George Washington University, Washington, D. C.
Mowrer, H. H., Johns Hopkins University, Baltimore, Md.
Nafe, J. P., Washington University, St. Louis, Mo.
Odom, C. L., Centenary College, Shreveport, La.
Omwake, Katharine, Agnes Scott College, Decatur, Ga.
Payne, Sarah, Southern Methodist University, Dallas, Tex.
Peterson, H. J., Mississippi State Teachers College, Hattiesburg, Miss.
Rexroad, C. N., Stephens College, Columbia, Mo.
Riddle, E. N., John Burroughs School, St. Louis, Mo.
Scheidt, Vernon, Johns Hopkins University, Baltimore, Md.
Shearer, Lucy D., Randolph-Macon Woman's College, Lynchburg, Va.
Smith, W. F., University of South Carolina, Columbia, S. C.
ten Hoor, Marten, Tulane University, New Orleans, La.
Tsanoff, R. A., Rice Institute, Houston, Tex.
Tyner, B. Y., Winthrop College, Rock Hill, S. C.
Van Wagenen, Noel B., Alabama Polytechnic Institute, Auburn, Ala.
Waskom, Hugh L., Florida State College for Women, Tallahassee, Fla.
Waters, R. H., University of Arkansas, Fayetteville, Ark.
Weedon, William S., University of Virginia, University, Va.
Wilson, Mazie, Johns Hopkins University, Baltimore, Md.
Young, Paul C., Louisiana State University, Baton Rouge, La.
Zener, Karl E., Duke University, Durham, N. C.
Ziegler, Thornton, Johns Hopkins University, Baltimore, Md.

A vote of thanks was extended to Tulane University and to Dr. J. M. Fletcher for their courtesies as hosts of the Society.

PROGRAM

Some Follies of Emancipated Psychology.[1] H. M. JOHNSON, Head of Simmons Investigation of Sleep, Mellon Institute; Visiting Professor of Psychology, Graduate School, American University.

In becoming emancipated from philosophy, modern psychology

[1] Address of the president of the Southern Society for Philosophy and Psychology, delivered at New Orleans, December 30, 1931.

repudiated the rules of reasoning and standards of proof which are prescribed by Aristotelian logic and which govern universal science and common-sense practice. For this logic it has substituted a special logic of its own in which equivocation is treated as a valid method instead of a fallacy. Consequently, a large body of doctrine which is valid in modern psychology will not stand the tests of validity which prevail in science and common sense.

Important ways in which equivocation occurs are: (1) spurious generalizations, illustrated by Thorndike's "Adult Learning"; (2) confusion of data of assumption with observational data, illustrated in the usual interpretation of "learning-curves" and in the conventional interpretation of Ebbinghaus's study of forgetting; (3) illicit identification of operationally defined concepts with formally defined concepts, illustrated in the conventional interpretation of tests of personal traits, and in Thurstone's treatment of the laws of mental growth; (4) and finally, in the confusion of resemblances with identities, upon which psychoanalysis is based.

Old-fashioned psychology was certainly not dangerous; it was not important; it was hardly interesting. Modern psychology is. It is interesting because it deals with the most important human relationships. It is important, because it endeavors to explain those relationships, and by explaining, to modify them. It is dangerous, because its reasoning upon the facts is heavily grounded in fallacy.

Factors Conditioning Efficiency in a Motor Skill. REX L. HOKE, Morehead (Ky.) State Teachers College.

The effects of five types of factors conditioning motor skill were investigated by a study of accuracy in tossing one-inch steel balls at a target placed eighteen feet from the subjects. The factors are: (1) punishment with electric shock for varying degrees of inaccuracy, (2) giving knowledge of exact result achieved, (3) direction of attention in various ways, (4) modification of interval between trials, and (5) simple instruction to perform the act.

The results indicate that use of punishment yielded fewest hits in outside zones, while knowledge of result yielded the greatest number of bull's eye hits. The effect of punishment is thus to produce an avoidance reaction. Efficiency was definitely increased by increasing the punishment zones from one to two, but use of a third punishment zone (adjacent the bull's eye) did not give added efficiency. Efficiency is increased by direction of attention to the painful consequence of errors, the net results of the act, and the idea of success. Attention

to the bull's eye and attention to the sensations accompanying the act are slightly beneficial. Low efficiency results when attention is directed to an irrelevant mental problem and when the mere instruction to "go ahead" is given. Efficiency was greater with a six-second interval between trials than with a two- or four-second interval. Variation among subjects is greater with instructions yielding low efficiency than with instructions yielding high efficiency.

Age and Sex Differences in Motor Skills. RICHARD W. HUSBAND, University of Wisconsin.

Having in mind certain general suppositions concerning sex differences and adolescent-adult differences in motor skills, this investigation proposed to determine their validity by measuring quantitatively certain comparative motor abilities of men and women, and of adults and adolescents. The subjects were composed of two groups: the college group of 30 men and 40 women, and the high school group of 17 men and 23 women. Both groups were tested on five parts of R. H. Seashore's motor skills battery, the tests being the Serial Discrimeter, Pursuit Rotor, Spool Packing, Crank Drill, and Tapping.

The findings, very briefly summarized, were: (1) college students are better in all three complex tests, reliably in one and reasonably superior in the other two; (2) in the simple tests, men in college were better than the younger men, but women of the two ages were about alike; (3) in the complex tests men lead in one, women in a second, and the two groups are equal on a third; (4) in the simple tests men are superior, moderately so in one and with certainty in a second. Differences in all cases, where they exist, seem to widen somewhat with age.

The Work Curve in Memorizing and Its Relationship to Retention. GOODRICH C. WHITE, Emory University.

The study involved the following problems: (1) a reduction in capacity to memorize as the result of continuous memorizing over a considerable period of time; (2) differences in the retention of material learned at different stages of the period of continuous memorizing; (3) the effect of practice on ability to memorize and of individual differences in the effects of practice and of continuous work; (4) the nature of the learning curve for given units of material under different conditions.

Findings: (1) marked improvement as a result of practice, the greatest improvement being shown by the initially least efficient;

(2) significant, though not great, diminution of efficiency in the course of continuous memorizing, differences in loss of efficiency appearing to be due in large part to differences in the "efficiency attitude" adopted by subjects at the start; (3) some advantage, in retention, in favor of material learned toward the end of the period of continuous memorizing, the chief factor accounting for this result being probably retroactive inhibition; (4) indications of a general as well as a retroactive inhibitory effect, manifesting itself in recall scores; (5) great similarity of learning curves under varying conditions, with a "final spurt" as a striking feature of the curves.

The Relation of Subliminal to Supraliminal Learning. O. A. SIMLEY, University of Arizona.

Learning is assumed to be a process of increasing the strength of single associative bonds; the speed with which such bonds function is taken as an adequate measure of their strength. This speed value is used here as an index of the relation of subliminal to supraliminal learning. The material consisted of 360 meaningless geometrical characters and the same number of nonsense syllables, arranged in 40 series of nine pairs each. The characters were presented in Hull's exposure apparatus, the syllables orally by the prompting method. The learner was to associate each character with its appropriate syllable, and to respond as quickly as possible by speaking the correct syllable whenever the character appeared. Serial associations were eliminated by changing the order of presentation each time. Reaction time was measured with a Hopkins chronoscope, wired electrically in series with the exposure apparatus and a Dunlap voice key.

The following conclusions appear: (1) Supraliminal learning (as measured by the increasing facility of the associative bonds) is a function of subliminal learning (as measured by the number of promptings required to establish the bonds). (2) The process of learning is represented not in a single curve but in several curves, depending upon the difficulty with which the associative bonds are established. (3) Learning is most rapid in the initial stage of the process.

Susceptibility of Poetry to Retroactive Inhibition. FRED MCKINNEY, University of Missouri.

Retroactive inhibition has been reported for nonsense syllables, chess patterns, mazes, and words. The problem of the present study concerns the possible effect of retroactive inhibition in the case of meaningful and interrelated material, namely poetry. Ninety-three

college students learned 12 lines of one poem and 95 learned the same amount of a similar poem. These groups were divided into three smaller groups, each working under different conditions, with approximately 60 subjects in a group. All groups "learned" 5 minutes, "recalled" 5 minutes, then either learned a second 12 lines of poetry, a list of nonsense syllables, or listened to a Seashore pitch discrimination record, according as they were a work or rest group, and finally "recalled" the original poem for 5 minutes. A retention test was taken by all subjects one week later, in which 5 minutes were allowed for recall of the original 12 lines of poetry. The conclusions are as follows: (1) Poetry is not susceptible to retroactive inhibition upon immediate recall, either with similar or dissimilar material used as an interpolation. (2) Retroactive inhibition in poetry appears in recall after a delay of one week.

The Concept of Forgetting. JOHN A. MCGEOCH, University of Missouri.

It is the purpose of this paper to examine the concept of forgetting and to inquire into its systematic relations to other concepts. Forgetting, which is only the partial obverse of retention, is treated in most discussions entirely without definition, and no systematic attempt has been made to determine its boundaries. A survey of the phenomena usually classified as cases of forgetting shows that the only characteristic which all possess is that of representing, in some measurable way, a loss in the functioning of a learned activity. Other possible criteria are examined and discarded. A question at once arises regarding the relations of the decrements called forgetting to decrements from continuous work and from other special conditions. It is concluded that there are no logical grounds for a sharp distinction between such decrements. All may be conceived to lie in the same continuum, and forgetting is defined as any decrement in the functioning of a learned activity, whether from use or from disuse.

Experiments in Ability Grouping in Spanish, German and French. H. H. REMMERS, Purdue University.

Students in beginning courses in the three modern languages named in the title were sectioned on the basis of ability, as measured by freshman entrance placement tests, sex, school of enrollment in the University, and previous achievement in the language in question. The experimental criteria were average grades of the experimental and control groups and the relative amount of academic mortality. Grades were determined on the basis of a standard procedure in which

each instructor contributed his proportionate share of test questions and in which each examination question was graded by one instructor for all students, thus holding constant the factor of differences in standards of marking as between different instructors for the examination as a whole. The experiments were carried out over a period of four semesters or two years.

The Difference Limen for the Primary Colors and for White. P. F. FINNER, Florida State College for Women.

The photoelectric cell, with thermionic amplification, was used to measure the differential limen for the four primary colors and for white. The wave length was kept constant by employing color filters. Forty-six subjects were used, with these results: (1) The individual differences are found to be large and to present interesting variations in the fields investigated. (2) There is some evidence of skewness toward fine degrees of discrimination among young women subjects. (3) The brightness limens for each color have a high correlation with the brightness limens of the color or colors next to it on the spectrum; the correlations between the difference limens for complementary colors are low.

The Relative Quickness of Visual and Auditory Perception. WILEY F. SMITH, University of South Carolina.

An apparatus was constructed by which any one of 4 sounds of different intensity could be presented simultaneously or nearly simultaneously with any one of 4 lights varying in intensity. The sixteen possible "intensity" combinations were presented to two groups of 40 subjects each. One group merely reported which stimulus was perceived first, being unaware of possible simultaneity; the other group reported whether or not an interval between the two stimuli was perceived. No doubtful reports were allowed. The results were as follows: (1) the "uncertainty range" is affected, for both groups, by an increase in either light or sound intensity, the effects differing for the two groups; (2) the intensity effect varies directly with the interval between the stimuli; (3) intensities of auditory and visual stimuli may be equated so that perception time for both is identical; (4) the possibility of a measurement comparable to the rheobase in chronaxie is suggested.

An Experiment in Cutaneous Denervation. LYLE H. LANIER, Vanderbilt University.

The general methods and certain results of an experimental study of the effects of cutaneous denervation are reported. Emphasis is

placed upon the general interrelations of the several "modes" of sensation, both immediately following denervation and during regeneration of the nerves. Lantern slides showing areas of anesthesia to warmth, cold, pain and light touch stimuli at three-weeks intervals are presented. Although the experiment is incomplete, the following conclusions seem justified: (1) The dissociations occurring both immediately after denervation and during regeneration support the hypothesis of four separate afferent mechanisms, corresponding to cold, warmth, pain and "contact." The evidence seems to disprove the quantitative theory of Nafe. (2) These four forms of sensibility nevertheless fall generally into two groups: (a) a thermal group, and (b) a contact-pain group. The virtual coincidence, in general, of the zones of anesthesia to contact and pain and the much larger, closely corresponding zones for cold and warmth present an interesting neurological problem. (3) Head's theory of two afferent cutaneous systems in peripheral nerves receives little support from the data, since (a) the "intermediate" zone does not manifest uniformly the "protopathic" complex of attributes; (b) there is not the differential order of return of sensation such as the theory requires; (c) the "protopathic" aspects of sensation (hypersensitivity and "reference") occur on skin responding to light touch, showing apparently no inhibition of the former by the latter ("epicritic").

Poggendorff's Illusion and the Alleged Angle Estimation—Again Refuted. MAX F. MEYER, University of Missouri.

Galperin recently published in the *Z. f. P.* an article in which he again refutes the old theory that angle overestimation and underestimation is the "cause" of the illusion. He further demonstrates that the strength of the Poggendorff illusion can be considerably increased by the addition of certain lines to those which are judged displaced.

The method of refuting the angle estimation theory used in "The Psychology of the Other-One" ten years ago accomplishes the same end more economically and even more convincingly than Galperin's argument. (Demonstration.)

Concerning Galperin's second accomplishment, for which he offers no plausible theory, a theory is offered which is illustrated by adding to the Poggendorff figure a parallelogram of which the displaced lines are a part, namely a diagonal dividing the parallelogram into two triangles. (Demonstration.) The neurological explanation can be given through the assumption that the triangle produces a "strong" nervous current and the two displaced lines two "weak"

nervous currents which are "deflected" into the stronger one and make up the motor reaction which means one side of the triangle. Thus they are prevented (inhibited, as some unfortunately say, mixing in a physiological concept of another field) from producing the reaction of "two separate lines forming a broken one."

McDougall has recently modified his older "drainage" theory so that it is indistinguishable from the speaker's neurological theory of deflection. Under these circumstances, the priority of having discovered the principle of "nervous deflection of a weak by a strong current" may be granted to him.

The Reliability and Validity of Student Ratings. C. C. Ross, University of Kentucky.

Two hundred students rated instructors according to a rating-scale, and then, without warning, repeated the ratings a week later. Correlations varying from slightly negative to plus 1.00 were found, the average being from .60 to .70.

Further problems studied were: (1) the agreement among students in placing certain activities on a "pleasantness-unpleasantness" scale; (2) the agreement and reliability of the scoring of arithmetic papers by experienced students. The results suggest a cautious use of such ratings in research.

The Consistency of College Teachers' Judgments Concerning Teaching Difficulties. G. C. BRANDERBURG, Purdue University.

A survey of objective conditions surrounding classroom teachers' work, together with results of questionnaires sent to teachers, revealed the following obstacles to good work on the part of the college teacher: (1) too much time required for reading papers, (2) poor class room conditions such as heat, light, ventilation, etc., (3) indifferent attitude of students, (4) too heavy teaching load, (5) unsatisfactory office conditions. The five factors that interfered least frequently were found to be (1) lack of interest in teaching, (2) too much supervision of research, (3) poor health, (4) not adapted to teaching, (5) too much research work. A high coefficient of correlation was found between the results of the first and second questionnaires. Very close agreement was found among all ranks of an instructional staff as to the relative seriousness of teaching handicaps, with the exception of departmental heads and assistants. The individual who has most to do with teaching conditions, that is, the head of the department, does not see teaching problems in the same way as do teaching members of his staff.

The Development of Instruction in Psychology in the South. JOSEPH PETERSON, George Peabody College for Teachers.

Two reports (1928 and 1931) on institutions and teachers in the southern states have been printed and circulated by the Society's Committee on the Teaching of Psychology, which show in the southern states an increase of 54 per cent in the number of properly qualified teachers of psychology in the 3 years 1928–31. In the same period the corresponding increase in the other 32 states was only 37 per cent, and, in the United States it was only 40 per cent. This shows considerable progress toward better psychology instruction and must be due in good part to the five years' work of the Southern Society from 1926 to 1931. The number of qualified psychology teachers in the south in 1930 per million population follows: Alabama 3.4, Arkansas 1.1, D. C. 14.3, Florida 4.1, Georgia 2.8, Kentucky 4.2, Louisiana 2.4, Maryland 12.2, Mississippi 1.0, Missouri 4.1, North Carolina 4.1, Oklahoma 2.5, South Carolina 1.7, Tennessee 5.9, Texas 2.1, Virginia 5.4, West Virginia 4.7, all combined 6.1. For the entire United States there are 9.1, and for the other thirty-two states, 9.5 psychologists per million population.

The Concept of Normality. A. S. EDWARDS, University of Georgia.

The problems of normality in psychology have been attacked by several students of the subject from various points of view and without a common principle of method. The problems are similar to those in the other sciences, and, as in those sciences, need to be based upon averages. Many problems arise: Normality for the different sexes, different races, different ages, etc.; furthermore, the problem is not merely one of the normal individual as a whole, but of the normal individual as regards various traits; the problem also arises as to the size of the normal group, the amount of deviation from the average that can be admitted to the normal group. Some discussion is given of mathematical and clinical studies.

Are "Emotions" Teleological Constructs? KNIGHT DUNLAP, The Johns Hopkins University.

The "emotions" were definitely and justifiably aligned with the "instincts" by William James, but in spite of the abandonment of old-fashioned "instincts," the "emotions" hang on in the textbooks and the behaviorist bases his theory of emotional development on discrete primary "emotions." Emotions, as named, are clearly artifactual, and are determined by reference to the situations in which

the reactor is placed, and by the interests and purposes of the classifier. Any of the conventional names may apply to widely different affective conditions, according to the interest of the namer; and the same affective state may have diverse names according to this interest. An individual's report that he feels depressed, elated, confident, anxious, etc.; and the behavior taken to indicate such "feelings," express the person's cognitive attitude towards the situation more often than they express a really distinctive type of "feeling."

Methodology and Aesthetics. HERBERT C. SANBORN, Vanderbilt University.

Recently there has been a persistent attempt to establish an objective science of art in which, according to the program of certain students, everything psychological shall be excluded, chiefly on the ground that psychological aesthetics fails to do justice to the field of art. It is necessary to realize that disputes in this field, as indeed everywhere else, are ultimately metaphysical in nature, and that divergences in results are to be expected from fundamental divergences in methods. Investigation should doubtless be carried on by every method available, with the results obtained by one method used to supplement and interpret those obtained in other ways, leaving to metaphysical revision the question whether there is any one method which embodies concretely all the others. Specific interpretations of aesthetic experience are valid in so far as they are in harmony with the systems of which they are specifications, while the validity of these in turn would reside in their inclusiveness and coherence, that is, the degree to which they realize absolute system.

Metaphysics and Aesthetics. HAROLD N. LEE, Newcomb College.

The predominating tendency in the history of aesthetics has been to consider the problems of aesthetics from the viewpoint of some metaphysical doctrine, and to offer solutions to them such as would be dictated by or at least in harmony with a systematic metaphysics. This procedure is exactly the reverse of that which an application of the scientific method to philosophy would indicate. Aesthetics is the investigation of one of the fields of experience and therefore can not assume that the final questions, which, if they are ever to be answered, must be answered by taking into consideration what fragmentary knowledge can be ascertained about aesthetics, have been already answered. In other words, aesthetic theory must enunciate its principles independently of any formulated metaphysical doctrine. No principles may be found in a correctly elaborated aesthetics which are

not equally subject to interpretation from the viewpoint of an idealistic or a realistic or any other kind of metaphysical theory.

A Critical Analysis of the Concept of Introspection. MARTEN TEN HOOR, Tulane University.

The concept of introspection has always been accepted as an ultimate in all philosophical disciplines; it has not been subjected to critical analysis by philosophers and psychologists. The traditional notions of introspection, the double-self notion and the double-series notion, are invalid because they imply a dichotomy of experience. Actually, all awareness is sensorily mediated, and introspection as an experience event must denote some type of awareness. But there is no consciousness *per se* or awareness *per se;* there are types of awareness which are the concrete ultimates. Introspection must then be a type of sensorily mediated awareness. In introspection the locus is within the body; in extrospection, without the body. Behavior can enter experience only as sensory awareness. Hence "pure behavior," is as much a metaphysical assumption as the ego or self.

The Source of Application of the Causality Concept. W. H. WALKER, Berea College.

Since Kant's day thought regarding the concept of causality has vibrated between the empirical and the rationalistic positions. The patent fact is that we do think of the causal relation as a necessary one when we apply it in the physical world. We act upon that assumption, and the assumption is justified in the large. But it is justified only in a general way. We never have observed the same conditions producing identical results. We always conclude that there must have been some unperceived variation in the conditions which brought about the variation in the result. It is not even likely that the present repudiation of uniformity in the action of electrons and quanta will be permanently accepted. We cannot think of nature in terms of caprice. Similarly, we do not think of ourselves as a part of the chain of necessarily connected causes and effects. We think of ourselves as causes, but we cannot eliminate the conviction that we are creative causes, at least in some of our decisions. This concept of creative personality has precisely the same ground and the same validity as the concept of mechanical causation.

The Shadowland of Science. CHARLES A. S. DWIGHT, Keuka College.

The philosophic problems raised by discoveries in the field of microscopic physics are discussed. The implications of the principle

of "indeterminacy" justify a belief in the power of man by virtue of his consciousness and will to "make a difference" in the world in which he lives. The spiritual view of the world is more plausible than before.

General and Specific Factors in Child Development. S. A. COURTIS, University of Michigan.

Children in the schools of Italy, Switzerland, England, Scotland, and America, 30,000 in all, were measured with respect to height, weight, broad jump, eruption of teeth, scores in two mental and one educational test. Certain of these measurements were expressed in units of growth and analyzed from the point of view of the general and specific factor theory. The tabulations reveal the influence of three sets of specific factors—starting points, environmental influences, and maxima at maturity—and one general factor, rate of growth. The conclusions afford a new point of attack upon the analysis and interpretation of psychological measurements, and upon the prediction of growth.

Emotional Attachments of Young Children. JOHN E. ANDERSON, University of Minnesota.

Data secured in connection with a survey made by the White House Conference on Child Health and Protection are analyzed to test the Freudian assumption of a natural tendency for the child to be attracted to the parent of the opposite sex. Questionnaires were sent to the parents of 3,178 children (1,626 boys, 1,552 girls), in which information about the child's favorite parent and the conditions stimulating "jealousy" was requested. An analysis of the data leads to the following conclusions: (1) There are no outstanding sex differences at any age level in emotional attachments. (2) About half of both the girls and the boys at all ages have no favorites in the household. Among the remainder there is a somewhat greater tendency for both boys and girls to have the mother as a favorite. The tendency to have favorites decreases with age. (3) More children, irrespective of sex, show jealousy when the mother shows affection to another child than under any other circumstances. Manifestations of jealousy decrease with age and are somewhat more likely to be present in girls than in boys. (4) No indication whatever is given of the existence of a natural tendency for the young child to show more affection for the parent of the opposite sex than for the parent of the same sex.

The Food Selections of Nursery School Children. THOMAS F. VANCE, Iowa State College.

The food selections of thirty children enrolled in the nursery school at Iowa State College have been recorded for a period of one year including the summer term. The summaries show a high correlation between different quarters of the school year and an equally high correlation between the order of tasting and finishing. Meat and eggs, in different modes of preparation, have a higher rank than vegetables. Raw vegetables are preferred to cooked ones. The children ate the boiled vegetables better than the puree. In general, food combinations are not eaten as well as each element served separately. Appetite is at the low ebb in December and January, June and July. A correlation appears between the frequency with which the food is served and its rank.

Individual Difference in a Basic Physiological Mechanism of Young Chimpanzees. JOSEPH G. YOSHIOKA and CARLYLE JACOBSEN, Anthropoid Experiment Station of Yale University.

Four young and two infant chimpanzees were daily measured for a period of three months for pulse rate, respiratory rate, and body temperature. It was found that pulse rate varied the most among these individuals, respiratory rate varying much less, temperature the least. The ratio of respiratory rate to pulse rate, however, remained relatively constant. It seems that the heart-lung mechanism is so coördinated that a higher pulse rate is accompanied by a correspondingly higher respiratory rate, thus making the ratio between the two relatively stable. The standard deviations of the ratio, however, varied significantly, indicating that this basic heart-lung coördination operates more efficiently and quickly in one individual than in another, and the ranking of respiratory rate to pulse rate corresponds roughly to that made in terms of their general behavior.

A Technical Study of "Scattering" in the Stanford-Binet Test. LUTON ACKERSON, Institute for Juvenile Research, and MINNA EMCH, Cook County Psychopathic Hospital, Chicago, Ill.

The results of five technical methods of computing scatter upon the same set of 100 Stanford-Binet records (methods proposed by S. L. Pressey, Merrill, G. Thomson, and Woodworth) are compared. Subjective estimates in rank order of scattering, as rated by four persons familiar with actual clinic use of the test, were also obtained. The intercorrelations among the five technical measures ranged from .68 to .97, with a mean of .87. The intercorrelations among the four

raters' rankings ranged from .77 to .92, with a mean of .85. Both measures of scatter thus show considerable consistency. The correlations of the individual subjective rankings with the five technical measures ranged from .47 to .92, with a mean of .74, and correlations of the equally-weighted composite of the four raters' rankings ranged from .69 to .89, with a mean of .79. On examining these latter coefficients, we find that the correlations with the Woodworth-Thomson measures were definitely the lowest. Since the Woodworth-Thomson method is unquestionably the best substantiated mathematically, we must conclude that the fault lies with the impressionistic rankings. In clinic practice subjective estimates of scatter in test performance should be discarded in favor of the actual Woodworth-Thomson computation.

The Inadequacy of Current Intelligence Tests for Testing Kentucky Mountain Children. E. J. ASHER, University of Kentucky.

The Myers Mental Measure was given to 363 children in 15 rural mountain schools in southeastern Kentucky. The National Intelligence Test, Form B, was given to 234 of these children. Later, 56 children were tested with the Stanford Revision and the Herring Revision of the Binet-Simon Tests.

The median I.Q. on the Myers test was 68.2, on the National test 71.5. The median I.Q. on the Stanford and Herring Revisions was 72.85. I.Q.'s on the Myers test decrease with age from 83.5 for age seven to 60.6 for age fifteen. One cannot justly conclude that a large per cent of these children are deficient mentally, since the norms with which they are compared were obtained for the most part from children in city schools. The mountain environment is not favorable, as indicated in part by the decrease of I.Q. with age, for acquiring the kind of knowledge which is demanded in these tests. There seemed to be no significant difference between the reading and non-reading tests used.

The "Long Time" Effect of Practice on Intelligence Tests. D. A. WORCESTER, University of Nebraska.

The effect of coaching on intelligence tests and of "short time" practice effect has been studied. Summaries of three studies on the "long time" practice effect are here reported—one with high school pupils and two with college students. In the high school study differing amounts of practice on standard intelligence tests were given. Significant increases of score due to previous experience on tests were shown. The greater the amount of practice, the greater was the increase in score, though not at a uniform rate. College students

taking the Army Alpha test a second time made significantly higher scores than those who never had taken the test before. In the other study of college students, using the Ohio State University Psychological Test—it was shown that those who had taken any other intelligence test at any time scored significantly higher than those with no previous experience with tests.

Scoring Objective Tests. NOEL B. CUFF, Eastern Kentucky State Teachers College.

Results of studies on the rapidity and accuracy of scoring objective tests are reported. Greater speed and accuracy was found when answers were recorded on special sheets (not on the test sheet) and when scoring stencils were used containing mimeographed circles around correct answers.

Resistance to Muscular Fatigue in Hypnosis. PAUL C. YOUNG, Louisiana State University.

Using nineteen subjects, six of whom were controls, the comparative abilities of persons in hypnosis and in the normal state as regards resistance to fatigue were studied. The results of this experimentation seem to indicate that there is no great increase in the ability to withstand fatigue in hypnosis; but all hypnotic subjects claimed to have felt no fatigue in hypnosis or immediately upon coming out of an hypnotic session during which they had been fatigued almost to exhaustion. Individual variations were as great among the hypnotic subjects in the hypnotic state as they were among the control subjects in the two different periods of experimentation which were correlative with the hypnotic and waking periods of the hypnotic subjects. A series of check experiments, using only five of the somnambulistic subjects and no control subjects, but otherwise maintaining a comparative technique, seemed to verify the results of the main series of experiments.

Hypnotically Induced Dissociation and the Psychogalvanic Reflex. ROY M. DORCUS, The Johns Hopkins University.

A brief summary of the psychological and neurological implications of so-called dissociation is presented. Experiments in which a comparison of the psychogalvanic activity of subjects in whom anesthesia, anacusia, and amnesia have been induced hypnotically, with the psychogalvanic activity of the same subjects under normal circumstances indicate that no difference in the two conditions exist. An implication of the results is that one of the meanings attributed to the term " dissociation " is a mere abstraction, since no evidence is avail-

able to substantiate the theory that the neural pathway is broken or disturbed.

Normal Illusions as Factors Coincident with the Illusions of the Insane. TRIGANT BURROW, New York City.

From experimental studies with groups composed of normal and neurotic subjects, evidence is offered that the material which occupies the interest of psychiatry is not that constituting the patient's disorder. The symptoms of mental disorder are but reflections of an impairment that is deeper seated within the organism and equally characteristic of normal as of pathological individuals. This impairment consists in definite physiological tensions, alterations and disturbances.

Traditional psychiatry holds that mental disorder consists in a disparity between the mental content of the patient and the content of the so-called normal persons about him. Experimentation with the interreactions of individuals under conditions of laboratory control indicates that the real disparity lies not between ideas as they may exist between one individual and another. Rather, the disparity consists in a discrepancy between those feelings and sensations of the individual organism as a whole and those which belong to that segment of the organism located within the cerebrum, with its secondarily acquired ideas and images. Such a condition is perceptible and remediable only through recourse to physiological methods and not by attempting to exchange ideas for ideas and images for images.

Some Medical Analogies in Abnormal Psychology. J. M. FLETCHER, Tulane University.

The influence of analogies from medicine upon historical conceptions of mental abnormality is outlined. From Aristotle to Freud, this tendency has persisted. In no system of psychology is there such a detailed array of medical analogies as there is in Freudian psychology. Nearly all of the steps in Freud's diagnosis and treatment of hysteria appear to be based upon medical analogy. Adler's doctrine of compensation for inferiority is admittedly derived from data secured in the practice of pediatrics. Psychology therefore owes much to medicine. But in order that safe use may be made of what is derived from medicine and from other sciences it must be borne in mind that analogies do not afford proof. They are useful only by way of suggestion. They may be wholly wrong. Probably some of our schools in abnormal psychology will for this reason have to go the way of faculty psychology and associationism.

Students' Adjustments in Anger. H. MELTZER, Psychiatric Child Guidance Clinic, St. Louis, Mo.

The present study represents an attempt to investigate the influences of three psycho-social factors—sex, organization of home life and community setting—on the anger responses of college students. The method used is most adequately described as "controlled diary." The subjects were 93 students in a first course in psychology—58 women and 35 men—approximately one-half living in sorority and fraternity houses. The diaries yielded 393 anger responses for analysis.

Two general conclusions are indicated by the findings: (1) The time of occurrence of anger—time of day as well as day of week—is very closely related to the organization of home life and also to the nature of the community in which the college is located. (2) There is a large and significant sex difference in frequency of anger responses reported and also sources of thwartings arousing anger. Men report 39 per cent more anger experiences. Sixty-four per cent of the experiences reported by women are reactions to persons, 47 per cent defensive and 19 per cent aggressive. Only 36 per cent of the anger experiences reported by men are reactions to persons, 29 per cent defensive and 7 per cent aggressive.

Character and Background of the Candidates for the Edison Scholarship. J. B. MALLER, Institute of School Experimentation, Teachers College, Columbia University.

A comprehensive analysis was made of the records of all the candidates chosen for the Edison Scholarship during the years of 1929 and 1930. This group of 98 high school graduates included representatives from each state and the District of Columbia. The candidates had been chosen on the basis of rigorous examinations and probably represent those of the highest ranking among the high school graduates of 1929–1930 throughout the United States. A condensed form of the tests given to the Edison scholars was also given to the participants in the Science Essay contest sponsored by the American Association for the Advancement of Science and to a group of 119 high school seniors in a New York school. The Edison scholarship candidates come from a higher than average social background. Their main interest lies in the field of science. They tend toward conservatism and extraversion. They scored very much higher than other groups on tests of science and mathematics and somewhat higher on questions of personality.

SPECIAL REVIEWS

Psychologies of 1930. Vol. II. Edited by Carl Murchison. Worcester, Massachusetts: Clark University Press, 1930. Pp. xix+495.

I

If a novice were to compare the *Psychologies of 1925* and of *1930,* he would find a great many differences between them which he might attribute to a five-year change in psychology itself. It takes, for example, approximately 100,000 more words to tell about the psychologies of 1930 than it did about the psychologies of 1925. The novice might suppose that twelve kinds of psychology now grow where only five grew before. He would observe that the more recent survey is better documented and gives a much more scholarly impression than did the first one. Seven of the nine authors contributing to the first volume rewrite in the second, Morton Prince and J. B. Watson being left out. The first has died and the second has given no promise of being able to make further contributions to the science, at least on its experimental side. Seventeen new names are found in the list of contributors, and a first reading might lead to more of the "futility" which the editor hoped would be lessened when he began the series.

In several of his first impressions, however, the novice would have been mistaken, for these two books do not give a picture of five years in the growth of a science but instead, a study of the growth of an idea. The idea was to create a cross-section of contemporary theoretical psychology at five or ten-year intervals, partly for the sake of the confused beginner in psychology, and partly for the sake of the future historian. In 1925 the hope was also expressed that the various fields of psychology might also be represented. Volume II of this series presents, therefore, a truer picture of the complexity of psychology on the theoretical side than did Volume I; but a description of some of the major fields of research in psychology has gone into other volumes such as *The Foundations of Experimental Psychology* and the *Handbook of Child Psychology.* The first is a volume which does in the field of ascertained fact that which the book under review might very well have been expected to do on the theoretical side. In other words, there is a tremendous difference in the merit and sub-

stantial quality of the *Foundations* as opposed to the *Psychologies of 1930*. Only a few of the contributors to the latter volume have made a serious effort to become as self-critical as future historians might wish they had been and practically none of them has written either to diminish the "futility" offered as one of the motives for starting the series or to find points of agreement rather than points of disagreement. For the most part, the chapters are bare restatements, without critical self-examination, of positions already held and instead of offering, therefore, to the historian of the future a definite assurance that 1930 was beginning to see constructive work in the field of method and point of view, our historian will scan the pages rather rapidly and turn, perhaps, to later volumes in the series. Since most of the writing in psychology at the present time consists either of technical accounts of experimentation, on the one hand, or of text-books, on the other, one might have hoped that these self-appraisals at five-year intervals could come to represent a high degree of critical self-examination and perhaps a stern effort to describe the uniformities in the science rather than to exaggerate its differences.

There seem to be a good many different ways in which the volume before us should be reviewed. It might be possible, for example, to find out whether the *Psychologies of 1930* show any distinct sign of progress over the psychologies that were being written in 1925. In other words, it might be interesting to find out in detail whether the men who have contributed to both volumes have passed through a defensible change in point of view during the period. As we shall see, Bentley, McDougall, and Dunlap, among others, have modified their position (Bentley more than any of the others) and these changes should be remarked.* It might also be possible to review this book in search of the degree of consistency between the summary offered and the other published work of the author. Some of the authors (Washburn, Hunter, Weiss, Woodworth, etc.) have clearly given nothing but summaries of their previous positions. Some (McDougall, Carr, Hunter, Bentley, Sander, Spearman, and Flugel) have set out, for the most part, to justify their point of view before critics and doubters, and still others (Woodworth, McDougall, Troland) have tried to show how their point of view can be used as a device which shall integrate the whole science. The Russians were invited, apparently, to make American writers acquainted with the work that is being done in the U. S. S. R.

Our own choice of procedure will be based upon a suggestion made by Bentley who begins his article with the remark that the

Psychologies of 1930 might either "reveal the general state of progress in psychology's major undertakings" (p. 95), or "set forth the individual writer's particular point of view" (p. 95). Since it is so obvious that editorial policy favored the second plan, we shall attempt, first of all, to make a running commentary on the papers as they appear in the volume, and then we shall try to search out the general picture of psychology which is presented by the *Psychology* rather than the *Psychologies of 1930*.

II

In contrast to the *Psychologies of 1925* which began with behaviorism, the *Psychologies of 1930* begins with hormic psychology. McDougall is more convinced than ever that the purposive character of human action is no longer in dispute (p. 3) and that the science must, therefore, accept the proposition that active striving toward a goal is a fundamental category of psychology (p. 4). In the process of rejecting the study of "motivation," "drives," "sets," and "incentives," in animal psychology, Thorndike's doctrine of hedonism (in learning), Troland's interpretation of hedonism and its resulting theory of motivation, Drever's arguments for inborn impulses, Woodworth's dynamic psychology, the application of the hormic theory only to animals and to the lower functions of the human organism by Klages and Prinzhorn, and Stapledon's denial of the universality of the hormic theory—all on the grounds either that they do not go far enough or that they are perversions of the true doctrine—McDougall constructs his own point of view in an argument that takes him, in many respects, beyond the purposive psychology described in 1925 (pp. 5–26). McDougall's theory now asserts that hormic activity is an energy manifestation, the form which the energy takes remaining unknown. This manifestation of energy is guided by cognition or awareness into such channels as will lead the organism eventually to its goal. Hormic activity, once initiated, will continue until the goal is reached, aided and abetted by pleasurable experiences and thwarted by disagreeable experiences. Once the goal is attained, that particular outlet for hormic activity will close (pp. 14–15). Since hormic activity is highly protean in its character it follows that where there is life there is always mind. The theory thus offers itself (i) as an adequate foundation for genetic psychology, (ii) as an adequate explanation of novelties, (iii) as a proper form of opposition to intellectualism, (iv) as an essential psychological basis for philosophy, (v) as an intelligible and consistent account of human values, (vi) as a basis for explaining the

relationship between the conscious life of man and the physiological processes of regulation and interaction in the functioning of all tissues, and (vii) as a sound basis for assimilating all that is proper and useful in the newer school of psychology (pp. 26–33). The paper concludes with a brief statement of the origins of hormic psychology (pp. 33–35).

Chapter Two offers the only extended historical survey included in the volume. Brett finds that contemporary psychology displays a number of "rudimentary organs or 'vestiges of creation' which need valuation" (p. 39) and he gives, therefore, an altogether adequate and critically illuminating account of the origin of associationism and of the act psychology; but the account bears the stamp of the old school of historians of psychology-and-philosophy rather than of the new school which writes about the history of a science. Ten lines, for example, dispose of the experimental study of association. These few lines, however, when taken in conjunction with Pavlov's studies of nerve function, on the one hand, and Strand's doctrine of sentiment and complex, on the other, lead to the conclusion that "the later history of associationism reveals a change of front which makes the older antagonism between content and act almost obsolete" (p. 47). Brett then picks up the thread of the act psychology and follows it through the writings of Kant and Brentano in order to prepare the way for the statement that the act psychology had to be written so that it could escape the "glue of association" (p. 49). Münsterberg and Stout are cited to show that the act psychology had, in its turn, to face "the problem of mental connections" (p. 52). "Dominant interests" and "dominant ideas" came, in the act psychology, to function as the organizing agents in total experience (p. 53). These agents were brought to laboratory expression—in slightly different forms, to be sure—by the work of Ach, Bühler, Messer, Watt, *et al.* The general conclusion of the paper is that we may not be too confident that the "older points of view have lost all their vitality" (p. 55). Brett's article would have been more useful if it had been as carefully documented as are some of the others in the series.

The field of functional psychology is covered by Carr's paper on functionalism, a paper which just misses being a critical addition to the position of the functionalists. A short, historical résumé of the arguments between Titchener and Angell on functionalism (pp. 59–61) leads Carr to a defense of the proposition that the definition of function which makes it equivalent to mental activity has the same

meaning as the definition of function which makes it a service or an aid to the attaining of some end, a distinction pointed out by Ruckmick (p. 60). The argument for identity of the two definitions is based on the proposition that both of the uses mentioned by Ruckmick are conjoined in the mathematical definition of function. With the aid of mathematical support, Carr goes back to the Titchener-Angell controversy for the sake of defending the functional point of view (pp. 62–65). The program of functionalism is said to rest, first of all, upon the assertion that mental acts are the proper objects of a functionalistic study. These acts may be described in various ways. They may be analyzed into the simpler components (meaning, content, and relations) and in this respect functionalism has some problems which are equivalent to those of existentialism. In the second place, functionalism studies the contingent relations between the several components of an act, a study made possible by the use of function in the mathematical sense even though it becomes necessary to speak of the "function of a function" (p. 65). Mental acts are also to be studied with respect to their genetic history and to be correlated with the structure and physiological features of the organism so far as it is possible to do so. The last part of the paper makes an attempt to evaluate and defend this program of functionalism, an attempt which is worked out pretty largely in the light of Titchener's argument that a science can have nothing to do with value, use, or a practical application. The conclusion is that teleological concepts are defensible and that functional psychology has gone on developing in accordance with its own particular genius largely because of the working truce of mutual respect created between existentialism and functionalism.

Under the topic, "Psychological Theories of Those Whose Training Background was the Structuralism of E. B. Titchener," we find papers by Washburn, Bentley, Boring, and Nafe. Miss Washburn's paper is a short summary of the position outlined, for the most part, in her *Movement and Mental Imagery*. She finds that psychology is committed to dualism and to mechanism, a thesis which must make conscious processes epi-phenomenal. Consciousness accompanies a certain ratio between the excitation and inhibition of a motor discharge, a situation created by the existence of incompatible movements. Miss Washburn finds that her position agrees with behaviorism in being mechanistic, with structural psychology in being dualistic, with functional psychology through its motor principles of explanation, and with Gestalt psychology in the description of mental

processes. It differs from behaviorism in being dualistic, from structural psychology because it uses laws of bodily movement as its essential explanatory principles, from functional psychology by rejecting interactionism, from Gestalt psychology because its own principles are far more adequate, and from purposive psychology because the latter is fundamentally and totally non-mechanistic.

Bentley has attempted a more searching study of the position first presented in his *The Field of Psychology*. He finds that the science of psychology has been hindered rather than helped by influences from outside sources, and principally from biology, medicine, and education. Escape from this situation is to be gained only through the discovery of an essentially *psychological* description of the problems of psychology. The first step in this description is the delineation of two coördinate groups of sciences which shall deal with living things *as living things*, viz., the biological and the psychological sciences. Living things are a "T" system. With respect to the "T" system, the B-science, viz., biology, inspects certain functions while the P-science, viz., psychology, inspects certain others. B-functions concern metabolism and other events intrinsic to the organs and structures of the body. The P-functions include those operations by which the organism apprehends its surroundings, recognizes and acts upon its relations to other organisms and events, constructs a present, past, and future, deals with objects and occurrences as absent, supposed, or unreal, discerns its own ends, devises means for their satisfaction, and the like (p. 98). The real issue in this derivation of the program of psychology lies in the demonstration that the P-functions are not to be qualified as conscious. This difficulty is evaded by saying that the body is the vehicle of both the B-functions and P-functions. B-functions are characterized by a physiological color whereas the P-functions are characterized by an experiential color. But this experiential color is not mental stuff or mental process. It designates the fact that the whole world was changed when man came into it. The character of things in it was changed in the sense that objects and events are announced through the operation of the P-functions. Other functions, aside from the one suggested by announcement, are baptized with the names initiation, participation, resolution, and interpretation. This means, of course, a breakdown of the distinction between organism and environment so far as psychology is concerned for this can be a distinction to be drawn only between a B-system and non-organic systems and agencies. It appears that all of the P-functions are intimately related

to the body in the sense (i) that they are determined by local interrelations within and between bodily and physical systems and (ii) that they reflect the general tenor of bodily states or conditions in the whole T-system (p. 103). This argument opens the way to the study of neural patterns, on the one hand, and to the feelings and emotions, on the other (pp. 103–108). Since these and other words, however, have been denied reference to conscious states and since "whatever there was of actual existence and of actual organic resource must therefore appear in some other form or in another context" (p. 108) they become products of the P-functions. A "ragged and ill-logical" list of them is given (pp. 108–109) and distributed to the various sciences. Bentley has, then, as he says, become much more "radical" and departed "more boldly" from the mentalistic and the behavioristic traditions (p. 114). We shall return to this paper later on for it is one of the few papers that attempts a systematic appraisal of the science of psychology at a level that will define its peculiar office among the sciences and coördinate its seemingly diverse enterprises.

Still within the group characterized by affiliation with Titchener is the *Psychology for Eclectics* by Boring. Among the points of view and prolegomena which the *Psychologies of 1930* must accept are the propositions (i) that if the science of psychology has come to be truly scientific it can be scientific only in the physical, mechanistic sense of the "natural sciences," (ii) that psychology must choose the experimental method and eschew the empirical methods that are not experimental, (iii) that both behavior and phenomena are the data of the science, an admission that is justified by a rejection of dualism through the argument that the behaviorist substitutes the consciousness of the experimenter for the consciousness of the subject (pp. 119–123), (iv) the acceptance of the point of view of Gestalt psychology simply because this is, for the most part, the only psychology that has ever been seriously held, and (v) that a choice may be made in favor either of structuralism or functionalism, without inconsistency and subject to the inclination of each experimenter. The eclectic must grant, however, that some of these choices are to be made on epistemological rather than on psychological grounds, and that his first task, after having made them, is to hurry back to his laboratory and proceed with his experimental work.

The final paper in this group is by Nafe and purports to be a study of structural psychology. Experimental psychology studies (a) stimulus conditions, (b) nervous processes, (c) psychological experience, and (d) reaction or response (p. 128). Nafe too, then,

is an eclectic for in the long run the major problems of psychology will all be found to fit into a single pattern. A suggestion as to how the patterning is achieved is to be found in the sentence, "Thus we see in the general problems of discrimination a parallel to the psychological study of sensory processes, in form discrimination a parallel to the problems of perception, and in the work on the learning process a parallel to our third problem" (p. 134). If these parallels are carried out in detail and made to include other points of view such as the *Gestalttheorie,* it will turn out that "there are no fundamental differences between the experimental groups" (p. 139).

Configurational or Gestalt psychology is represented, as it was in the *Psychologies of 1925,* by two papers on space perception. Köhler's paper continues his studies on the relation between perceptual configuration and dynamic intercourse among brain fields. The present thesis is that, in the differences between figure and ground, for example, it is not the local properties of given stimuli but the relation of these properties to each other that are decisive in the formation of perceptual units. A constellation of stimuli conceived in dynamic form suggests at once the idea that dynamic intercourse in any given field decides the question as to what is to become a unit in perception. Köhler goes ahead, then, to say something about problems that will have to be solved in the future. There is, for example, the question of the coördination of certain motor reactions (pp. 152–153), the explanation of memory, recognition, meaning, and reproduction in terms of the fact that traces of early experiences will be dynamically organized in a manner quite similar to the organization of the earlier experiences themselves (pp. 153–155), and the belief that learning must rest upon the same principle of dynamic intercourse between processes streaming up to and through the brain (pp. 155–160).

Koffka makes a study of the perception of depth. After denying the adequacy of current theories which rest upon sensory cues which play the rôle of "signs" (162), he examines the plausibility of the doctrine that "all experienced order in experience is a true representation of a corresponding order in the underlying dynamical context of physiological processes" (p. 163). In order to explain tridimensional perception, it is necessary to assert that dynamic processes in the visual cortex need not be confined to surfaces. They may, on the contrary, have tri-dimensional properties. It will turn out, then, that when simple symmetry in the perceptual field is achievable in two dimensions, we shall see a plane figure. If

symmetry requires three dimensions, a solid object will be seen (p. 166). Tri-dimensionality in the Necker cube, for example, is to be explained not in terms of experience but on the ground of principles of organization (p. 166). The conclusion, then, which is illustrated by two cases of agnosia, and by an application of the theory to the doctrine of retinal disparity (pp. 172–184), would be that tri-dimensional perception is not a special addition to the general problems of perception but rather that bi-dimensional perception is a special case of tri-dimensional perception (p. 185).

The third paper in the field of configurational psychology is by Sander and can be described perhaps as the "higher configuration." Sander's fundamental thesis is that there is a trans-phenomenal, psychically active reality to the functions of which all organizations of conscious content owe their origin. This trans-phenomenal psychic principle transcends conscious phenomena and thus make a true psychology of personality possible. In some places, the trans-phenomenal psychic reality is said to be a complex of psychodispositional conditions (p. 190), and in other places it is a psychic principle in its own right. In other words, there are dispositional interests of the soul which transcend the immediate present to determine dynamic structure from a higher level than that reached by mere description of configurations themselves. Sander, then, has overreached Gestalt psychology, for this and related points of view represent only substructures under a structural or structured totality.

Perhaps the contributions to the *Psychologies of 1930* which will be used most frequently are those from the Russian psychologists, Pavlov, Schniermann, and Kornilov. Pavlov's paper (Chapter 11) must have been written in a hurry and consists for the most part of a simple and brief statement of the need for further study on the nature of the interaction between the cortex and the nearest subcortical centers. Since the anatomical substratum of unconditioned reflexes is to be found in the basal ganglia nearest to the cerebral hemispheres and since unconditioned reflexes are not self-sufficient in the higher animals, a supplementary apparatus, viz., the cerebral hemispheres, must be brought into action, for it is this new apparatus that makes unconditioned reflexes appropriate to the environmental situation. Hence the great need for further study of the relation between the cortex and the sub-cortical centers.

Schniermann gives a faithful description of Bekhterev's reflexological school. The paper begins with a brief history of reflexology consisting of biographical references done on the order of the *History*

of Psychology in Autobiography. Bekhterev is pictured as basing his school upon a strictly objective, biological, scientific conception (p. 226), a conception which is worked out in terms of the doctrine of correlated activity as a function of the general properties of living matter. That is, from the strictly objective point of view the various structures of the organism are never without correlation with other structures and the organism itself is never independent of some degree of correlation, either implied or direct, with other living creatures (p. 227). The principal property of living matter is its capacity for reproduction—that is, the ability to reproduce the changes that occur under the influence of stimuli which may be only slightly similar in nature to the original stimuli. Correlated activity is, of course, subject to evolution and complication (pp. 228–231). It lends itself, therefore, not only to a genetic approach but to an existential approach. General reflexology establishes the general laws of correlated activity, a study which turns out to be almost wholly physiological (pp. 232–233). Individual reflexology aims at a study of individual variation in correlated reflex activity (p. 234). Age reflexology studies the general mechanisms of correlated reflex activity in their development (especially in children) (pp. 234–235). Collective reflexology centralizes its work on the relation of the sociogenetic elements of behavior (p. 235) and genetic reflexology studies the development of correlated activity both from the ontogenetic and the phylogenetic points of view (pp. 236–237). The explicit denial of subjective analysis implies, of course, that Bekhterev's reflexology is established upon a materialistic dialectic and upon a free utilization of biological and sociological methods of knowledge. It has, therefore, confessedly little in common with foreign tendencies in psychology which lean upon subjective concepts but has many points in common with American behaviorism.

Kornilov's paper is a description of psychology in the light of dialectic materialism. It is based upon the proposition that Hegel stood dialectic on its head. Hegel is asserted to have favored the primacy of thought and of spirit. Marx substituted, for the Hegelian absolute spirit, material nature as something original and primordial, and thus dialectic materialism becomes the *Weltanschauung* behind this type of psychology (pp. 243–263). Kornilov does not proceed clearly from this foundation, but whether the difficulty is Kornilov's or remains intrinsic to dialectic materialism, the reviewer has not been able to discover. A part of the confusion lies in Kornilov's treatment

of the mind-body problem. Dialectic materialism seems to deny any sort of subjectivism. The transition to a kind of double-aspect theory is gained by saying that consciousness, although indistinguishable in its nature from matter, is one of the properties of most highly organized matter (p. 247). Feuerbach, for example, is quoted to the effect that "that which for me subjectively is a purely spiritual, immaterial, unsensual act is in itself objectively a material sensual act" (p. 248). One gains the distinct impression that dialectic materialism is a philosophy rather than a science for no small part of Kornilov's paper is devoted to the logic of his position after the fashion of Hegel. In general, the import of dialectic materialism leads to a study of the behavior of a living integral individual in concrete social relations where reactions have a biosociological significance. Reactions are studied not for the sake of knowing about them, but for the sake of securing control over them.

Behaviorism is represented, first, by Hunter's paper on the relations between anthroponomy and psychology and, second, by Weiss, on the bio-social standpoint in psychology. Hunter seems to put himself in the curious position of describing the subject matters, the methods, and the results of two sciences, viz., anthroponomy and psychology, and at the same time of denying, both implicitly and explicitly, that there are two sciences. The denial is carried, partly, in terms of the argument that consciousness or experience (presumably the subject matter of psychology) can be applied only to what other people call the environment of man (pp. 282–283). It is carried also by a repetition of his argument concerning the irreversible SP-LR relationship (pp. 287–290). Having demonstrated that there is only one real science of "psychology," viz., anthroponomy, Hunter proceeds to argue that anthroponomy studies the behavior of the whole organism while psychology studies the domain of experience (pp. 289–290). Anthroponomy has only one method, viz., the observation of behavior. The psychologist has two, the one being individualistic and the other social (pp. 290–297). Anthroponomy issues in a set of results which does not omit from the resulting picture of human nature any observable or verifiable datum (p. 297). "The fundamental position of the anthroponomist is that everything that can be shown to be present in or to influence human behavior will be dealt with by his science or by some other science of the organism if the behavior—for example, digestion—lies outside the field of anthroponomy" (p. 300). The psychologist, on the other hand, thinks that

he secures two types of results, the one he assumes to concern consciousness or experience and the other which all agree to call behavior (pp. 297–300).

Weiss' paper, one of the shortest in the book, is an outline of his previous position. It is a genuine misfortune for psychology that he was not in a position to write more critically and constructively, especially in relating his own program to anthroponomy and to the biosociological work of the Russian schools.

Reaction psychology still has its champion in Dunlap. His paper is, in part, a restatement of his systematic position and, in part, a prophecy of the revised edition of the *Elements of Scientific Psychology*. He begins with a pedagogical device for making the point of view of reaction (and of all) psychology known to beginners and then considers, in turn, without criticism or close discussion, the newer phases of his thesis. These concern (i) his "heretical hypothesis of learning" (pp. 312–313), (ii) his doctrine that "any healthy human brain is potentially equal to any other healthy human brain so far as mental processes are concerned—the difference between individuals being a peripheral rather than a central matter" (p. 314), (iii) a short discussion of the significance which the rejection of the whole doctrine of instincts must have for scientific psychology (pp. 317–319), (iv) a further study of the nature and function of desires in racial psychology, political psychology, and the psychology of religion (pp. 319–321), and (v) a brief essay at a definition of such terms as retention, learning, or habit formation, and the unconscious (pp. 321–323).

Woodworth's paper on dynamic psychology is essentially an argument that the substantial concept underlying the solidarity of the psychological group is dynamic psychology. The term "dynamic" is not to be thought of as equivalent to motivation, drive, force, or energy, but only as a recognition of the fact that psychology cannot help but make use of the notions of cause and effect (pp. 328 ff.). Since existential psychology, behaviorism, and the Gestalt psychology all make use of some sort of cause and effect sequence embodied in stimulus and response, they must, of necessity, fit into a single pattern.

As we have already remarked, the *Psychologies of 1930* has been enriched by going outside the domain of American psychology. We ought to be grateful, therefore, not only for a statement of the point of view of the Russian psychologists but for Spearman's résumé of his general theory of two factors. This paper consists, in part, of a brief summary of his general point of view (pp. 340 ff.) and, in part, of the argument that the theory of two factors is a school capable of

bringing other schools to an end (pp. 363–364). This is to be gained on the principle that psychology should cease argumentation and proceed from the better known to the less well known, from what is more likely to gain general assent to what is less likely.

The recognition of foreign schools of psychology is continued in Part IX which includes papers from Janet, Flugel, and Adler. Janet is even more brief than Weiss, giving only an argument for the proposition that at least one group of psychologists should confine themselves to the application, to definite individuals, of all available psychological and physiological knowledge. This application would proceed from a study of the way in which memory plays a part in the development of personality to a search for the effects of traumatic memory upon mental organization.

Flugel offers a fairly satisfactory résumé of the psychoanalytical school, a résumé which would have profited greatly by proper documentation. The two fundamental concepts of psychoanalysis, viz., of the unconscious and of psychical determinism, are described partly from the point of view of their medical value and partly from the point of view of their standing as major scientific concepts. For reasons explicitly named, Flugel appears to be on the defensive and he devotes a good part of his paper, therefore, to a justification of his program. A defense is called for because psychoanalysis was not originated by a psychologist and because its main features were developed before it attracted any appreciable notice at all from the scientific world. When they came to be known they aroused so much incredulity and displeasure that they were judged on emotional rather than on scientific grounds.

Adler's individual psychology is to be sharply distinguished from Janet's analytical psychology, mostly in terms of the proposition that the impulsive life of man suffers variations and contortions, curtailments, and exaggerations, relative to the kind and degree of its aggressive power (p. 395). In other words, Adler gives a running account of the considerations which made him depart from the Freudian point of view. His chapter might as well have gone to the *History of Psychology in Autobiography* as to the *Psychologies of 1930*.

Part XII of the book is entitled, "Some of the Problems Fundamental to All Psychology." The implication is that none of the preceding contributors have said anything fundamental to all psychology, an implication definitely controverted in a good many places by the contributors themselves. It appears, then, that Part XII was a convenient section in which to group a number of papers which

did not seem to fall naturally to other sections. Dewey's contribution comes under the title, "Conduct and Experience." It represents one of the few serious attempts among the contributors to coördinate and integrate the problems of psychology rather than to separate and specify them. Conduct, of course, refers to the point of view of behaviorism whereas experience refers to the point of view of the introspectionists. It seems to the reviewer that the most important contributions in Dewey's paper lie in the arguments (i) that "identifying modes of individual experiencing with modes of behavior identified objectively and objectively analyzable makes a science of psychology possible" (p. 418), and (ii) that "it is not, in short, the qualities of things experienced but the qualities that differentiate certain acts of the individual that concern psychologists" (p. 419). These two arguments seem to make possible the study of experience without remaining satisfied with the contentions of the behaviorist in their extreme form.

Kelley, at the end of his paper on the inheritance of mental traits, becomes the only contributor appearing to have a kind thought for his possible reviewer. In a summary he is made to argue that the important steps in a study of mental inheritance shall include (i) a determination of psychologically independent mental traits, (ii) a recasting of the picture of nature and nurture so that they will not appear independently additive in producing the final outcome, (iii) a definition of the problem of inheritance in terms broad enough to include common variations in heredity, environment, and maturity, (iv) a study of long-time development which can be fractionated, and (v) a definition of mental elements and of their relations in terms not strange to, but independent of more primitive forms of life. These conclusions are drawn from an argument which analyzes with care and in considerable mathematical detail some of the current researches in genetics, on twins, and on the relation between the factors of heredity and environment.

The only contributor to make a second appearance is Spearman. This second paper gives a running account of types of abnormality and anomaly and a definition of normality. Under the former there is included a study of the unusual, the extreme, the mysterious, the exceptional, the pathological, and the criminal (pp. 445–450). By way of a positive definition of normality there are said to be central norms, lateral norms, undefined and shifting norms, pseudonorms, and a variety of special norms (pp. 451–459).

It is probably by chance rather than by intention that the *Psycholo-*

gies of 1930 end, as they began, on closely related themes. Troland's paper is entitled, " Motivational Psychology," and consists essentially of an outline of the position described in his volume on the *Fundamentals of Human Motivation*. As readers of Troland know, his definition of motivation is exceedingly protean, for it can be interpreted in terms of each of the schools of psychology. Students of Troland know also that when motivation is applied to behaviorism it has almost the same meaning that it might have for Woodworth, save that Troland would not probably attribute a tendency to act to a mechanism. That is to say, a motivational psychology, so far as behaviorism is concerned, is interested primarily in the mechanism of response where the quality or character of response derives its character from the architecture and general functional properties of the brain. When applied to psychical or conscious factors, however, the motivation psychology begins to resemble McDougall's position—at least in its earlier form—for these psychical or conscious factors begin to sustain a causal relationship or, at least, a functional relationship to, nervous systems.

III

We have now tried to give a brief picture of the great variety in the psychology being written in 1930. Our general feeling is that there has been an attempt not only on the part of the editor but on the part of the contributors themselves to emphasize differences and to make psychology appear just as diversified as possible. This has been done even at the expense of placing men in divisions according to their training or according to their known interest rather than in accordance with the contents of their papers. The grouping together of Washburn, Bentley, and Boring is a case in point, for Titchener would look with amazement at the sections of the book characterized by his name. The division of psychology according to nationalities is another case. Then, too, there is the tacit assumption in the title of the book and in the editorial policy that any thesis, be it of method, field of research, type of fact, or mode of explanation of fact, thereby constitutes a school of psychology.

We do not mean to assert that progress, both in research and in understanding, cannot come out of disagreement, contention, and criticism. There is too much positive evidence in psychology and in the other sciences as well to make such an opinion carry any weight. On the other hand, it does seem advisable to ask whether there is not more identity of opinion and of procedure in psychology than is revealed in the account just given of the *Psychologies of 1930*. Then,

too, it might be fruitful to know where, on the theoretical or systematic side, the science of psychology may be apt to go before it makes another cross-sectional appraisal of itself. There seem to be three ways in which this part of our task can be done. In the first place, we might enumerate the dominant interests of contemporary psychology in so far as they are revealed by the pages before us. In the second place, it might be possible to suggest the places where different writers could well afford to search for better understanding in a use of terms and for a closer fusion of points of view. In the third place, we might hazard a prediction as to the presumable trend of systematic thought in the psychology of tomorrow. We shall now attempt each of these appraisals in turn.

If we may take the *Psychologies of 1930* as a fairly faithful collection of current points of view (and this seems to be the case if we reject certain papers which describe some of the accessories of the science rather than its fundamental tenets), what kind of a total picture of the major interests of psychology can be made out of them? We may consider, first, a few of the more incidental parts of the picture. It would seem that psychology is actively interested in its history. McDougall (pp. 3–10, 33 ff.) describes the history of his point of view. Brett's entire paper (Chapter Two) is, as we have seen, a short history of the association psychology and of the act psychologies. Carr (pp. 59–60) gives a brief account of the events which took place in the decades within which the functional and existential psychologies were being defined. Schniermann (pp. 221–225) writes of the history of reflexology in terms of the development of Bekhterev's teaching and Adler's entire paper is historical and biographical. Kornilov gives a very adequate statement of the development of the Marxian psychology (pp. 243–263). Spearman (pp. 340 ff.) gives a short account of the development of his own school. In numerous other places in the book (pp. 116, 120, 123, 162–163, 191) there is a persistent attempt to integrate the current program of the science with its history, especially its recent experimental history. On the whole, this tendency in contemporary psychology appears to be wholesome now that it is old enough to have earned two serious histories of its scientific lifetime.

There is some suggestion that psychology is continuing its interest in its general presuppositions, both with respect to science in general and with respect to its relations to specific sciences, say biology. That is to say, if psychology is to be a science, it ought to have some concern about the presuppositions of science and a critical

knowledge of the implications of scientific methodology, especially in view of the fact that, in its foundations, these considerations were dominant. The papers by Bentley and Boring are reflections of this interest, the first studying briefly the relations between psychology and biology and the second studying the more general scientific concepts. There are a good many other places where the same interest crops out. The argument for dialectic materialism (Chapter XIII) and Washburn's brief comments on dualism and materialism (pp. 81–82) are other cases in point. On the whole, however, one might get the impression that contemporary psychology is not taking this part of its work as seriously as it ought, especially in view of the fact that many of the differences between men and points of view may have to be resolved in terms of a total scientific perspective rather than in terms which have originated internally to the science. As we have already remarked, psychology in its origin had close and often unexpressed relations to the scientific methodology of the 70's, 80's and 90's; and this fact may not be listed among the least of those which have to do with the present situation of the science. It seems clear now that psychology was developed in terms of a logic of method that was already in process of abandonment by the physical sciences.

The *Psychologies of 1925* promised the inclusion of papers on the various fields of psychology in future surveys of the work of psychology. It would appear that the editor had given up this policy in favor of some such series as is included in the *Foundations of Experimental Psychology*, for the various fields of psychology enter into the present series of papers only in an indirect way. Genetic psychology is represented by a few comments in McDougall's paper (pp. 26 f.), in Schniermann's paper (pp. 227–230), in Bentley's paper (pp. 107 ff.), and the like. On the whole, these references to genetic psychology imply the present unsatisfactory foundations of genetic psychology and suggest the terms in which such an account of psychological fact can be written. Systematic work in this field seems to be one of the great tasks for future work.

Applied psychology is represented by six pages in Carr's essay (pp. 70–76) and by scattering remarks by Schniermann and Kornilov regarding the social significance of reflexology and of dialectic materialism. These same authors, together with Weiss, are writing toward a social psychology as well as toward a psychology of the individual. Methods also receive scattering attention, principally by Washburn (p. 82), Schniermann (pp. 230–231), Hunter (pp. 290, 291, 297), and Boring (pp. 117–119). We have already noted the

places where individual psychology and psychiatry come to expression. On the whole, the editorial policy which minimizes this kind of material (*i.e.*, the field of psychology) seems justified, especially in view of the fact that the *Foundations* and such symposia as the *Feelings and Emotions* and the *Handbook of Child Psychology* offer possibilities.

A major key to the proper appraisal of the *Psychologies of 1930* is to be found in the fact that most of the alleged psychologies listed in the table of contents are not *psychologies* at all. We may pick out, first, the papers that do not seem to have a coördinate place among the others, either with respect to the title or with respect to the editorial policy. It is clear that a history of associationism and of the act psychology cannot be a school of contemporary psychology, save in so far as it may contribute special researches on learning or strengthen the systematic position of functionalism. It is clear also that a definition of normality and a discussion of the inheritance of mental traits cannot properly be called schools of psychology. Furthermore, the use of psychological facts and theories for medical purposes can hardly be called a school. The papers by Janet, Flugel, and Adler are better spoken of, then, as illuminating a branch of applied psychology. This is true of them up to the point where they offer to scientific psychology a new group of theoretical concepts, say, the subconscious, in which case they are explanatory rather than systematic. In the same way, Spearman's "school to end schools" is much less of a school than it is a method of procedure for getting quantitative measurements of a statistical sort in psychology. Spearman's paper then, for the most part, is a study of method and not a school at all. A motor psychology is certainly a theory of the circumstances under which consciousness may arise out of the interplay of nerve processes and bodily movements, and it becomes, therefore, a theory about the mind-body problem rather than a systematic formulation of the problems of psychology. Dynamic psychology is a way of emphasizing one of the most obvious facts, not only in psychology but in science at large, viz., that there is always some sort of contingent relation between stimulus situations and the resulting state or activity of the organism. Dynamic psychology has not and does not now make use of a distinctive group of psychological facts. Studies upon the factors that lead to configuration in perceptual fields or in any other groups of phenomena have always been recognized by introspective psychology, save perhaps in the case of Mill and Spencer who were not psychologists at all. Response psychology seems, at

best, another way of saying what has already been said in dynamic psychology and implied in functional psychology. In other words, in spite of all of the varieties of psychological thought and opinion, the only substantial division in psychology is now and always has been drawn in terms (i) of those groups of facts which belong to experience and (ii) of those groups of facts which belong to behavior.

We may illustrate this point by some such summary of the papers as the following. There are to be found among them, first, methodological and propædeutic facts which are the accessories of psychological science. Among these are (i) acquaintance with the history of the science, (ii) statistical methods like those mentioned in the papers by Spearman and Kelley, (iii) certain definitions of terms (Spearman's definition of normality), and the like.

In the second place, there is the eternal problem of the nature of the subject-matter of psychology. At the present time this subject-matter is of three types, viz., mental events, cortical and other neural events, and behavior patterns. There are plenty of theories as to the interrelations between these three types of psychological material and plenty of difference of opinion as to the relative importance of them. We shall turn to this problem in a moment, for the possibility of schools of psychology resides here if anywhere.

In the third place, observed facts concerning these three types of material suggest categories of explanation. The trend of opinion in psychology is toward mechanism and not toward purpose, teleology, or hormic activity, as McDougall believes. In any case, explanatory categories lead to schools of philosophy and not to schools of psychology. In general, then, our conclusion is that schools of psychology are to be defined in terms of subject-matter, and this proposition carries us to the distinctive trend in the papers toward some kind of eclecticism with respect to the subject-matter of psychology.

There is, first, the eclecticism which is illustrated by Woodworth, McDougall, Spearman, and Troland. This is the kind which urges that one fundamental thesis can be made applicable to all kinds of psychological research. Woodworth, for example, argues that, since all science whatsoever turns, at last, upon some form of the doctrine of cause and effect, all psychologists, in spite of their close arguments to the contrary, must be intellectual and research siblings, if not twins. Integration of the science is not sought, therefore, in terms of a systematic appraisal of diverse interests as in the case of Boring (pp. 119–123), Bentley (Chapter V), Hunter (pp. 282 ff.),

and Dewey (Chapter XXII), but in terms of one form of the principle of sufficient reason. McDougall, in his assertion that all behavior is the result of purposive striving, unifies psychology in the same way. Hormic energy is not a datum of science but a device for explaining certain facts issuing from the science. Unification is gained, therefore, not by a direct appraisal of the subject-matter of psychology but by clothing it in a philosophical garb. Spearman insists that if the various psychologies will accept the principle of passing from the best known to the least known, they cannot help but be agreed, the implication being that there is no fundamental difference in the kind or scientific status of facts best known. It is helpful to have our attention called to the fact that, after all, a science is a science and not an exercise of wit and imagination; but to call attention to a precaution in scientific progress is not to furnish grounds for a systematic study of psychological materials. Troland, as we have seen, has a protean concept which may change its character and function so as to adapt itself to any school.

It seems to the reviewer that eclecticisms of this type can not go very far toward that kind of systematic construction in psychology which shall lead to more than a formal and somewhat forced unification in the science. Another type of eclecticism is to be found in the papers by Bentley, Boring, Nafe, Hunter, and Dewey. All five of these writers are attempting to search out the conditions and circumstances under which the main dualism in psychology, viz., the relation between the objective and subjective points of view, can be revolved into a single coherent point of view. We have already noted how Nafe handles this question. He argues for identity of procedure in psychology through the fact that behavior patterns are strictly commensurate with mental patterns and hence, by implication, somehow related to neural patterns. We have already cited his contention that problems of discrimination offer a strict parallel to the psychological study of sensory processes while form discrimination stands as a parallel to the problems of perception. Conditioning as a physiological process obviously bears a strong family resemblance to association and learning. Discrimination and form discrimination, on the one hand, and conditioning, on the other, are behavioristic terms. They seem to offer, according to Nafe, a distinct parallel to certain major problems in the traditional psychology. It might be helpful to see whether this sort of parallelism could be made complete. Boring, in addition to this, makes a tentative search for some of the philosophical and epistemological assumptions that must be accepted in

common by both the objective and subjective points of view. This is particularly true of the choice of determination over freedom, of experimentalism over empiricism, and of his discussion of behaviorism and phenomenalism.

Dewey argues that such words as "sensation," "memory," "conceiving," and the like, teased out, as they are, from a developing temporal behavior continuum and marked off into specific act situations "discriminate modes of behavior having their own discernible qualities by virtue of which one is able to discriminate and identify them as special modes of behavior" (p. 414). We may quote again his contention that "It is not the quality of things experienced but the qualities that differentiate certain acts of the individual that concern the psychologist" (p. 419). This, according to Dewey, is a fact about behavior that has been overlooked by the behaviorist. He has failed to note that some behavior has distinctive qualities which, in virtue of the distinctive properties of their consequences, are to be termed "mental" or "conscious."

Bentley seems to be saying something of the same general import when he divides all of the functions of a T-system into two sets, viz., the B-functions and the P-functions, the P-functions having, in turn, qualities or properties which make them describable and distinguishable in terms of their psychological or experiential coloring. Bentley's argument has it that we ought not to cleave a T-system straight through the middle and then hand a physical half to one science and a mental half to the other (p. 98). This twinning of the T-system can be avoided by a strict adherence to the description of P-functions which are distinctive in their own right and not because they are conscious or because conscious antecedents can be extracted from them (p. 108). The implication is that consciousness is either a faulty way of describing P-functions, the possible *quality* side of certain P-functions by virtue of which objects are announced to the T-system, or a product of the exercise of the P-functions.

Some support for eclecticism is to be found in those places where different contributors seem to be talking about the same thing in different terms. This would seem to be the natural path to follow toward eclecticism and it might come to serve also as a preliminary step toward systematic reconstruction. There is, first of all, the possibility of effecting a closer bond of sympathy between American behaviorism and the work of the Russian school of psychology. To divide these workers in terms of nationality is only to obscure similarities, magnify dissimilarities and to convey the impression that

psychology is worse confused than is actually the case. This bond of sympathy might be made to show at least two strands for the work of Pavlov, Bekhterev, and Kornilov cannot help but be fundamental (i) to the study of contingent relations among behavior patterns and (ii) to the study of the cerebral functions whereby both behavior patterns and conscious processes find their adequate conditions for coming into existence and achieve their proper organization. It is true, of course, that Pavlov's description of the mechanisms responsible for conditioned and unconditioned reflexes presents a good many points of contrast with the dynamic patterns of the configurational school and with the work of Lashley. It seems entirely possible, however, that the reliance which functional psychology, existentialism, Bentley's P-functions, behaviorism, anthroponomy, reaction psychology, dynamic psychology, and configurational psychology place upon cortical functions might reasonably call for a functional, coherent group of neurological facts. It is one thing, of course, to approach cortical functions by way of certain glandular secretions, another to approach them by way of the dynamic properties of perceptual fields, still another to approach them by way of surgical insult to the cortex, and yet another by way of observable differences in behavior patterns. But there seems to be no valid reason why all of these modes of approach should not lead eventually to the same goal, viz., an understanding, not only of the structure of the brain and of its related organs, but to an understanding of its modes of functioning as well. In other words, it would certainly be to the advantage of psychology if the different men who are making use of physiological or neurological concepts could somehow get together in a symposium for the common study of their problems.

A similar suggestion might be applied to Weiss's biosocial standpoint in psychology, to the collective reflexology of the Bekhterev school and to Kornilov's biosociological doctrine of the behavior of a living, integral, concrete individual in concrete social conditions. In all of these alleged "schools" of psychology, behavior patterns seem to gain a certain definable part of their psychological quality or standing because so large a section of the environment of living creatures, and especially of men, is social in character.

One of the strongest threads of unity running through the papers is the interest of contemporary psychology in the functional and dynamic rather than in the static and existential points of view. Functionalism proper is still where it was. If this functionalism were to rid itself of its untenable leaning toward interactionism, it would

be wholly acceptable to motor psychology. Bentley has definitely accepted a " functional deflection " wherein the primary tasks of the sciences of life (biology and psychology) are the description of the T-system in terms of operation or activity (p. 98). Boring gives the eclectic the right to choose either existentialism or functionalism. And so we might run through the list. Instead of having functionalism, a psychology of P-functions, dynamic psychology, response psychology, and so on, it might be reasonable to ask that these several psychologies join in a symposium wherein likenesses and community of opinion rather than dissimilarities and contention, set the plan of argument.

We do not mean to say by this that the psychology of 1930 is necessarily more *behavioristic* than it has been. On the contrary, it seems fairer to say that contemporary psychology is inclined to accept a sort of methodological behaviorism as a working principle more candidly than has ever been the case before. In arriving at this position and in defending it, both explicitly and implicitly, it has become necessary to formulate the problems of psychology in a way that shall include both the introspective and the behavioristic points of view. The traditional efforts in this direction are, of course, functional psychology and the various varieties of motor or reaction psychology. It now appears that the attack on this problem is moving in two different directions. On the one hand, there is a continued search for grounds upon which psychology may state with some confidence a new form of the doctrine of psycho-physical parallelism. Gestalt psychology, for example, continues to argue for a strict parallel between the dynamical properties of the perceptual field and the dynamical properties of cortical function. This appears to the reviewer to be a movement that may eventuate in the discovery of, or at least in an assertion about, some sort of isomorphism (in the mathematical sense) between mental processes and cortical events. A complete doctrine of isomorphism would seem to say that Washburn's epiphenomenalism and the half-hearted attempts at a double-aspect theory on the part of some of the Russian psychologists, notably Schniermann, are only half-way approaches to a more complete type of mind-body parallelism. The older mind-body theories rested their case for parallelism on a set of contents here and a set of conduction fibers there. Now both sets have become energized or functionalized. These dynamic concepts seem to furnish a temporary escape from hormic explanations, on the one hand, and mechanistic explanations, on the other. At the very least it would seem worth

while to apply *Functionsbegriffe* to psychology as long as there is any promise in them.

There is, however, another kind of psychological parallelism going through the process of development. There are several suggestions in the papers before us, not only of the possibility, but of the desirability of describing behavior in terms of properties or characteristics which must have their origin in the activity of the nervous system. Instead of a parallelism between mental processes and neural processes, therefore, we are led to expect a parallelism between patterns of neural organization and distinguishable qualities of response. This represents a distinct point of contrast with those behaviorisms which classify behavior in terms of the social significance of response, or with respect to reflexes and other artificial units.

The indications at the present time are that psychology will continue its work in these several directions. Configuration psychologies may be expected to describe not only the dynamic properties of perceptual fields in conjunction with the dynamic properties of fields of force in the cortex and its related structures but to extend their work to the dynamic properties of behavior patterns. They will thus link themselves to the program of a methodological behaviorism that would rest its case on the description of the qualities of acts, either in the Dewey sense or the Bentley sense. The behaviorists likewise will, no doubt, continue their efforts to describe both the functions of the organism and specific behavior patterns in terms of the qualities or attributes put upon these functions and patterns by cortical activity. This means that psychology must begin to concern itself with the parallelisms or contingent relations between cortical activity and behavior patterns as seriously as it has concerned itself in the past with parallelisms between cortical activity and patterns of mental process.

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MONAKOW, C. VON, and MOURGUE, R. *Introduction Biologique à l'Étude de la Neurologie de la Psychopathologie: Intégration et Désintégration de la Fonction.* Paris: Felix Alcan, 1928. P. 408.

In his last book to be published before he died, Constantin von Monakow presents a survey of the whole field of neurology and psychiatry. During his long and productive life, he contributed widely to our knowledge of the anatomy, physiology, and pathology of the nervous system. In 1928, however, he completed, with the collaboration of Dr. Mourgue, a theoretical discussion of the whole

realm of neurobiology. This book, in its scope, erudition, and imaginative yet logical grandeur, bids fair to be one of the outstanding theoretical works in the field of biology of the last thirty years.

The title really expresses the whole content of the book: "Introduction Biologique à l'Étude de la Neurologie et de la Psychopathologie: Intégration et Désintégration de la Fonction." The approach is from the viewpoint of biology and not of physics or chemistry. The sphere of the living is definitely marked off from that of the dead. It must be studied, at least in the present state of our knowledge, by concepts drawn from its own sphere.

Further, although the work is an "Introduction," it is not an elementary text. Rather is it a preliminary survey of a vast, yet unified, field, where only limitation of knowledge justifies the title. In the abyss of ignorance it serves as a means of orientation, no more.

At one stroke the authors cut the Gordian knot of the Body-Mind problem. The "problem" disappears, although the mystery remains. Neurology and psychiatry, the somatic and the psychological, are discussed with a single unified approach. The concepts applicable to the one are equally applicable to the other. The separate disciplines of biology disappear; there is only the one field of neurobiology, which studies the origins and functions common, in some degree, to all living beings.

The method of study includes the integration of the separate functions on the one hand, and their disintegration on the other. Without this twofold approach proper perspective is impossible for either the normal or the abnormal.

In their studies, the authors range themselves definitely with the Bergsonian philosophy, and equally definitely with the hormic psychology. To Bergson they acknowledge three points of indebtedness: (1) The importance of *time* as the specific category of living beings. (2) The original duality of instinct and intelligence. (3) The notion of creative evolution, with the accretion of new values in the temporal course of development.

Let us take up first the discussion of instincts. All living beings have certain things in common, namely, a certain propulsive tendency, the tendency to approach and unite themselves with certain things or objects, or to retreat and defend themselves from certain others. They grow, adapt themselves to a common environment, reproduce, and maintain themselves in a certain state of security. Such tendencies comprise the sphere of the instincts. To the general propulsive tendency, which assures the individual the maximum security for the

distant future as well as the immediate present, the name "horme" is given (ὁρμη a setting into activity). Horme is a general property of protoplasm, analogous, for the writer, to the "conatus" of Spinoza.

The endocrine-vegetative system is closely linked with the instinctive sphere (though not identified with it), just as the cerebrospinal axis is fairly well correlated with orientation and intelligence. But the one has a propulsive, prospective, dynamic character which the other lacks. These two spheres are necessarily related, but their essential differences, phylogenetic as well as embryologic, must be kept in mind. It is the distinction of interoceptive as opposed to exteroceptive.

With this in mind, consider the definition of instincts, which are only expressions of the activity of horme. In a creature with a nervous system, an instinct is defined as a latent propulsive force, derived from the horme, which synthesizes the internal stimuli of protoplasm (interoceptivity) with stimuli from the external world (exteroceptivity), to assure the vital interests of the individual. It is an activity always working *towards* something, always finalistic. For this purpose it synthesizes all the materials at its command, the initial urge coming from the interoceptors, but requiring the exteroceptors (which includes the sense organs, orientation, intelligence and reasoning) for its fulfillment.

The instinct is a latent force. Its immediate manifestation in the present Monakow calls a "sentiment." A sentiment is a state of tension, with successive phases of incipience, growth, culmination, and regression to latency. It is an internal state requiring satisfaction, directed towards union with objects to attain that satisfaction (klisis*) or removal from objects as defense against threats to the individual's interests (ekklisis). Its objects may be either in the present or in the future.

Monakow insists that his concepts, with their teleology and animistic, non-mechanical tinge, are altogether *positive* notions, drawn from observations of phenomena, and therefore descriptive. Yet they are also metaphysical, since the actual nature of the horme, for example, is not known. Such a word may be properly descriptive; physicists used the words "electricity" and "magnetism," and formulated their laws, long before any concept of their real nature

*Klisis, from the Greek κλισις meaning "activity of going towards," designates this finalistic or creative tendency, in the sense of union toward a being or thing. Ekklisis designates the opposite.

was at hand. The use of the word horme, as in the phrase "The horme does this or that," is not the reification of an abstract principle. It is admittedly an artifice of language, yet an artifice necessary to convey the active and creative nature, the essential character remaining unknown.

The primitive horme, aiming at the security of the individual, becomes differentiated and progressively enriched through the sphere of exteroceptivity (French: "orientation et causalité"). The security of the individual takes on different values with time. During development these values succeed each other and are constantly being integrated. For the successive phases in this scale of values, further neologisms are necessary. For the primitive form of an instinct, relatively unmodified by exteroceptivity, with its goal a security in the present or very immediate future, the word hormetria is used (French: Hormétère; Greek: ὁρμετεριον instinct). As the instincts become much modified by the external world and its relations, with the goal directed towards security in the more or less distant future, the word noohormetria is used (French noohormétère, from the Greek νοῦς intelligence, plus ὁρμετεριον). This distinction is essentially one of values, and is the authors' way of bringing back values into a science from which mechanism would banish them.

In the consideration of the separate instincts, the authors start with what they call the formative instinct, that is, the development of the organism from the ovum to birth. The study of embryology shows that growth takes place as if to satisfy the immediate needs of life at first; functions relating to the future are developed afterwards. The interoceptive apparatus, closely related to the instinctive sphere, and immediately important for life, becomes highly developed at an early stage. What belongs to orientation in time and space, sensation, and movement, develops only at a later stage. This is true as well of the nervous system where myelination, for example, obeys a similar principle or urgency. Fiber tracts not useful for the immediate functions of life are the last to be myelinized.

The formative instinct is compared to an orchestra, in which all the separate instruments must subordinate their play in the interests of the whole. There is an aim in view, the preservation of the organism in the state of greatest security, with the present taking precedence over the future. Embryology may thus be considered a manifestation of the horme. The fundamental nature of instinctive life is legible even in preconscious histogenesis.

Next is considered the instinct of preservation manifest first at

birth, with the need of air and nourishment (reactions of klisis). Desires and needs appear rapidly, as well as reactions of avoidance and fright (ekklisis), long before the appearance of intelligence or deliberate relations with the external world. With the development of such relations the noohormetria stage develops. The moment of satisfaction is displaced from the present to the future. Proper objects of the instinct become defined in the following order, the individual, the mother, inanimate objects, the family, the social group, then perhaps humanity and the universe. In this development, the main example of klisis might be found in the desire for possession, power, or domination.

At this point we must introduce a new and fundamental concept—activity "en briques," or in fragments. All functions begin in fragmentary, disjointed fashion, the particular element being autonomous and out of relation with other elements. To take an example from the instinct of preservation, which includes the desire for possession, a small child may desire a particular object, but his desire is short-lived. He passes from object to object with startling facility, each new acquisition being considered a new manifestation of the instinct. But any coördinating, integrating influence is absent. Integration appears only after many elements have coexisted side by side, each in a relatively high state of development.

In the sex instinct, this principle is further exemplified. At the hormetria state, the individual himself is the object. The accidental discovery of the genitalia leads to the equally accidental discovery of pleasure derivable therefrom. Later there is a sex manifestation in the "psychic" sphere, where the individual has nameless aspirations and non-physical devotion to individuals of the same or opposite sex. The local sensations give rise to masturbation, the aspirations to a Platonic ideal. These elements coexist, "en briques," with no merging of the psychic and genital sphere, until the noohormetria stage. Then the physiological and psychic elements are integrated. A woman becomes the object not only of physical desire but of what might be called spiritual hunger as well. This is the adult fully integrated level, where new values appear, reaching towards the future. The original phases of the instinct, however, are not lost; they merely remain latent, ready to reappear if disintegration sets in.

The social instinct undergoes similar development founded on the instinct of preservation, as well as a primitive discrimination (protodiakrisis). This is particularly seen in the hormetria stage. The infant discriminates on the basis of the influence he exerts upon

others, and the reaction back upon himself. All such relations are originally only in the present moment. For the noohormetria, or full development of the social instinct, language must be an accomplished fact. Then, at play, at school, and in the family circle, conduct becomes related not only to the present but also to the distant future.

The authors mention briefly a religious instinct, on the grounds of the universality of religious phenomena. But the discussion is really only tentative, and need not further detain us.

Instinctive development is thus marked by the appearance of elements, directed towards ends immediately useful for the individual. With time, these ends become removed into the future. At the same time, the elements composing the instincts become welded together into the unity of the personality. In this process there is a synthesizing principle at work, regulating the conflicts of the instincts, working for equilibrium, and producing compensation in case of injury.

Even in the earliest stage of the formative instinct, there is some such force working for equilibrium as conclusively proved by Driesch. By dividing blastulas of the sea-urchin, he was able to produce a complete though reduced organism from only half of the embryonic tissue. Monakow himself, from his own extensive researches on malformations of the nervous system in fetal life, believes in a similar histogenetic compensation. Hyperplasia and hastened development of primitive structures, of the apparatus essential for brute life, seems to be the rule when the less necessary tissues, such as the cortex, are maldeveloped. Because of this, he considers that a compensatory force, aiming at equilibrium in the face of insult or injury, is a general protoplasmic property. This force he calls " syneidesis " or " biological conscience." It is the ultimate stage in the activity of the horme.

" Syneidesis " is not considered an active agent, or a *deus ex machina*. It is the name for the general workings of a process whose essence is unknown. " Syneidesis acts " is allowable only for utility of expression. Giving a name to a series of phenomena prevents those phenomena from being overlooked by hasty and immature theories. Yet the name adds not one iota to our knowledge of these phenomena.

The action of syneidesis in morphology has been briefly indicated. Its action of compensation may be elsewhere seen in the unintegrated behavior of children, in the development of the psychoneuroses and

psychoses, in the passional hypertrophy of one or another instinct (*e.g.*, Don Juan, Napoleon, Croesus, etc.), in the phenomena of excess and remorse, and in the cyclic processes of drug addiction. Here space forbids consideration of details.

In the psychological literature, there is no dearth of theories about the instinctive life, in either its normal or abnormal forms. Talking about "facts" very rarely if ever adds to our essential understanding of those facts. Yet all theorists are merely giving shorthand descriptions, by means of their concepts, of the facts under investigation. Such descriptions are more or less *ad hoc*. The theories of Freud, of Watson, of Driesch, or more special theories, *e.g.*, of learning, all cover their facts. But the question is, how applicable are these concepts to phenomena which they were not expressly designed to cover. Will the hypothesis apply to other fields not under immediate consideration?

Here the beauty of Monakow's procedure may become apparent. He has defined certain concepts of the instinctive life—the horme, hormetria and noohormetria, klisis and ekklisis, syneidesis, integration in time, integration "en briques." These have been framed particularly for the description of the instincts. We have already found them applicable to a large part of the fields of morphology and embryology. They are also applicable to the domain of reflexes, sensation and movement, and, in the field of pathology, to the various nervous and mental disorders. It is in the scope of his concepts that they surpass those of other theorists. That is to say, it is the *indirect* consequences of his hypotheses, and not their properties *ad hoc*, which give them value.

We are now ready to consider the development and integration of motor activity, that is, of sensation and movement. Fundamental is the distinction of simultaneous and successive. If, for example, we stimulate a point on the motor cortex, we obtain contraction of certain muscles and reciprocal inhibition of certain others. The whole occurs simultaneously, and is called by Monakow "synchronous localization." On the other hand, if we properly stimulate the hind leg of a spinal dog, we obtain movements of progression, involving both feet rhythmically and successively. In such a case there is no "center" linearly delimitable: instead, several parts are involved in a process which unrolls itself, giving rise to successive reciprocal excitations. The best example of this is locomotion in the upright posture, where the whole extent of the nervous system is involved. This type of activity is called "chronogenic localization." To try to give spatial

localization to a process which unfolds itself in time, is a contradiction.

Such processes occur because, whether in true locomotion or the progressive moments of the spinal dog, there are elements which *conserve* the stimuli for a long time. We may call it proprioceptive activity, if we wish, provided we apply the concept to all levels of the nervous system, and not merely to local responses from muscles. The succession of movements is caused by proprioceptive stimuli from a completed act. One movement engenders the immediately succeeding.

To such a process unrolling itself in time, Monakow gives the name "kinetic melody." He gives an excellent illustration. Consider an automatic music-box. There is a cylinder with nubbins upon it. In contact with the cylinder is a series of metal strips, each with its own period of vibration. The cylinder revolves, and as it does so, the nubbins, in proper order, strike each the proper metal strip, setting it vibrating. As the cylinder revolves, the melody is produced. Imagine now several cylinders, each with its own melody; there is an apparatus for shifting the series of metal strips from one cylinder to another. When one melody is completed there is a shift, and the metal strips are in contact with a new cylinder, ready to play a new tune. At the same time, there is necessarily some force to make the cylinders revolve, some power driving them at the proper speed, in even fashion.

This is the symbol of all organized motor activity. The driving force represents instinct, the *sine qua non* of activity. The lubricating oil would be the circulation of the blood and the cerebrospinal fluid. The apparatus for shifting from one cylinder to another would represent the different conduction paths. And clearly, the reaction between the nubbins and the vibrating strips, producing the melody, would be the neuromuscular activity as such. Yet protoplasm differs from the music-box in that the past is constantly modifying the future. There is self-regulation at work. The same melody is never really unrolled twice.

With this simile, we see how absurd is the question "*Where* is the melody?" The melody cannot be given spatial representation; it depends upon the temporal process. Hence the name "chronogenic localization," and the false conception implied by spatial localization in the form of "centers." If something should go wrong, say if one of the nubbins should be knocked off, there would be a gap in the melody, a *symptom*. But to localize the function at the source of the symptom is grave error. The function is in time, and cannot be localized spatially, any more than can the melody.

If now we examine motor activity as such, we observe the same integration in time of relatively discreet elements. The human fetus, even of 3–5 months, has definite reflexes, fragmentary, disorganized, autonomous. Reflexes and movements are much more organized at birth, but even so are very clearly fragmentary in nature. At birth, since there is no exteroceptive sphere, movements are called into existence only through interoceptive activity, *e.g.*, nursing at the breast. With the development of sense organs, exteroceptivity provides the source of movements, such as following a light with the eyes, or reactions of avoidance from a loud noise or bright light. Such movements are properly reflexes, and their fragmentary nature must be emphasized.

For the organization and integration of movement, the fragmentary character must be submerged, and the whole body involved. The time factor enters in with its progressive evolution from simultaneous to successive, in the sense discussed above. With such evolution, the kinetic melody becomes elaborated. The stages of this evolution, the degree of integration in the nervous system, may be read in its morphology, that is, in the state of myelination. This is possible up to the end of the second year, when myelination is complete, and the brain of the child differs from that of the adult only in size.

The kinetic melody, whose fragments are due either to interoceptive stimuli or responses to outer stimulation, is essentialy bound up with instinct. The developed melody is at the service of intelligence, but the "mise en train" is derived from some hormetria or noohormetria.

Integration in the so-called cognitive functions is similarly under the control of instincts. Differentiation of sense data, which the organism receives in confused fashion, is produced under the active influence of the horme, which selects from the mass according to the criteria of useful or harmful for the bodily economy. The individual enters into cognitive relations with the environment beginning with the most important needs.

From the chaos of varied impressions, what is differentiated out under the influence of the sentiments is called apperception. An apperception is the division of sense data according to characteristic signs, and the incorporation into memory. We have apperceptions of objects, states, relations, situations, and the like. They are registered in such fashion that they may be anew the object of an ecphoria, or unfolding in time.

Apperception is, then, the result of innumerable discriminative acts based on different hormetrias and noohormetrias. The entirety constitutes what is commonly called "personal experience." It is always to be remembered that the initial registration, the ecphoria, and prepotency of one or another apperception is made on the basis of klisis or ekklisis, the instinctive manifestations. These in turn are themselves determined by *values,* according to the moment of time envisaged. Consequently the same object may be included in several different apperceptions. A rather crude example would be woman. In the infant the apperception is guided by the instinct of preservation; following puberty by the sex instinct, and also by the social instinct. All these apperceptions coexist, but latently.

Most important in the development of cognition and intelligence is the development of language. The most primitive forms are drawn very directly from the instinctive sphere, in the form of the affective, non-articulate language founded on rudimentary klisis and ekklisis. The modes of expression—mime, gesture, inarticulate sounds—express fragments of mental attitudes and personal relations in the immediate present. Past or future are not known. Language is still "en briques." As the time span becomes important and orientation develops, articulate language develops *pari passu.* Space forbids our following out the steps of the development.

Last to be considered is the development of reasoning (French: causalité). Here two main types are distinguished: (1) the "causalité racine-branche," which is logical, orderly, objective, the method of science, with one proposition following another by necessity; and (2) the "causalité agglutinée," which is altogether subjective and contingent, obedient to the demands of the instinctive life, and the equivalent of the "logique des sentiments" of Ribot.

It is the latter type alone which is manifest in young children. For them the words "why" and "because" do not have the same meaning as for adults. The disconcerting answers of children are due to the special type of reasoning involved. The child makes causal relationships, not on the basis of natural cause and effect, but on the *value* of any particular element which happened to precede the given phenomenon. "Value" here means, relevance to the instinctive demands. "Precede" means, according to the principle of *post hoc ergo propter hoc.* Thus, a child says he smashed the teacup "because (sic) the dog was naughty." A particular preceding fragment is selected for its instinctive value to the child. That we cannot altogether understand that value, any more than we can in the

schizophrenic causal relations, is irrelevant. Unless we assume this value in the choice of a causal fragment, the thoughts of children, as well as of schizophrenics, is unintelligible.

This type of reasoning is applicable to adult life too. It is at the basis of our beliefs and prejudices, as well as of our conscious motives. There is the imperious demand of the ego that certain elements possessing instinctive value be causally connected with given phenomena. Not to do so would be intolerable. That is why prejudice or deep-seated beliefs cannot be extirpated by "logical" reasoning. Our so-called logical necessity finds application only where our instincts are not involved—in mathematics, logic and the sciences. Even in the latter the choice of hypotheses is largely determined by their instinctive value, and not by their logical compulsion.

What we call reasoning, therefore, begins in fortuitous association of fragments, where the association is determined by instinct, and applies only to the immediate present. With development, these associations apply to the more distant past and future, without differing in type. Of altogether different order is the "causalité racine-branche." In adult life the causalité agglutinée is frequently disguised by logical propositional form (rationalization), but its real nature can still be appreciated.

The process of integration is always towards the racine-branche type, but the other always coexists; and even the fragmentary forms remain latent, ready to reappear if disintegration sets in.

II

The foregoing concepts and descriptions find ready application in the field of pathology, that is, disintegration of function. Obviously, here we can only sketch the main outlines.

The notion of disintegration as the inverse of the normal functional development dates back to Hughlings Jackson. For him, evolution in the nervous system was the passage from levels which are lower, more organized, more simple and more automatic, to levels which are higher, less organized, more complex, and more voluntary. The lower levels at birth are definite and stereotyped, yet relatively simple. With growth, the repetition of phylogeny, these lower levels become subordinate to others which are less definite and stereotyped, yet much more complex. Their very complexity is a bar to organization, stereotypy, and mechanization.

If these higher levels are cut off by disease or injury, the lower levels resume their original ascendency, which has been merely latent in the process of subordination. Consequently, in all pathology of

the nervous system, we must distinguish between the *negative* components, which are the loss of the particular function destroyed—a simple erasure; and the *positive* components, or the appearance of phenomena not obvious in the normal state (or, if present, there appears a marked exaggeration of their importance). This positive aspect is also known as the "release" of function.

These ideas of Jackson are accepted, with certain reservations. Jackson chiefly lacked an appreciation of the time factor, such as we have seen above in the distinction of simultaneous and successive, in proprioceptive activity throughout the whole nervous system, and in the kinetic melody. His concept of temporal elaboration was altogether too static.

In this dissolution, with its positive and negative components, there is a two-fold process going on. In the first place, disintegration is not a regression to a functional whole which existed at some earlier time. Disintegration is not the *exact* inverse of evolution. Instead, there is a return to *fragments* of previous levels, or anachronisms. This is disintegration "en briques." The victim of paraplegia or dementia does not become a child again, but certain infantile responses (anachronisms) appear. The second principle is, that the organism actively struggles to achieve compensation with the materials at its command (action of syneidesis). Disintegration is therefore a regression to elements which were ontogenetically primitive, and at the same time a reintegration which is necessarily faulty.

This formula applies to all phases of pathology, in the field of morphology, in the psychoneuroses, and the psychoses. The simplest example is hemiplegia, where the cortical pathways to one side of the body are destroyed. Here there is loss of finely adjusted movements, which have cortical representation. There is the release of the lower centers, evidenced by the appearance of spasticity and qualitatively different reflexes. Yet the brute phenomena of locomotion are not necessarily lost. The affected arm and leg still play their proper part in the reintegration of what is left of the wreck.

More complicated, yet of essentially the same order, are the aphasias, apraxias, and agnosias. Here the lesions are in the cerebrum, and of such a nature as to impair the orderly sequence of certain higher activities, respectively of speech, of voluntary action, and of recognition of sense impressions. These disorders are not to be considered as a destruction of "higher centers," or the loss of mental elements, "ideas." Instead, they must be thought of as a

disturbance of ecphoria, that is, of the normal unfolding of factors constituting the kinetic (or psychic) melody. If we recall the example of the music-box, we see that a physical act (or a "mental act," such as recognition) implies an orderly succession, and at the same time a coördination, of many separate factors. Proprioceptive activity is necessary for this process to take place. The lesions in the above disorders—probably in the association pathways—are important, not for the loss of "associations," but for the loss of this proprioceptive activity required for the melody.

Consequently in these disorders certain activities are impaired (negative component), yet there are always certain residual phenomena (positive components). Such residual phenomena—the words remaining to the aphasic, the impressions recognized by the agnosic—can be understood only by reference to instinct. In the damaged state of the organism, the action of syneidesis results in an economy of effort, a conservation of energy. Monakow calls this a viscosity in the mobilization of nervous energy. The unfolding of the melody is so difficult that the organism is easily exhausted by the efforts to do or to understand. The raised threshold of the ecphoria is in the interests of conservation. Yet, it will be recalled, the "mise en train" of the melody *is* the instinctive life. Where the instincts are strongly involved, the threshold of the ecphoria becomes lowered, and certain acts become possible; whereas the same acts, were they unrelated to instinct, would not be possible because of this "viscosity."

Hence the residual phenomena are the examples of the disintegration "en briques," or anachronisms, elements acquired at a previous stage of development (not necessarily the earliest stages), under the influence of the instinctive life. Elements last to be acquired, less essential for the immediate instinctive life, are lost.

The influence of instinct is clearly seen in certain other responses. Actions which are impossible upon command, or in isolation from their normal context, become possible where the instinct is involved (normal context restored). *E.g.*, an apraxic may not be able to go through the motions of eating, upon command; yet if he is hungry he can spontaneously eat quite normally. An aphasic, who tried in vain to say "Non" on command, finally became angry and blurted out "Mais je ne peux dire 'Non,' M. le docteur." Emotion always has the effect of lowering the threshold of the ecphoria, and permitting actions impossible under other conditions.

We must unfortunately omit the interesting clinical detail, as well

as the detailed treatment of the disintegrative process. It is enough to sketch the main outline—the positive and negative components, the disintegration "en briques," the action of syneidesis, the importance of instinct.

When we approach the psychoneuroses and psychoses, the same principles are at work. The disorder, the insult, is in the instinctive sphere (secretory) rather than in the nervous tissues proper. It is the instincts, therefore, which disintegrate, and regress, "en briques," to more primitive levels.

In the psychoneuroses there is fragmentation and isolation of certain elements—the contractures, paralyses, compulsions, anesthesias, emotional outbursts, which are the psychoneurotic symptoms. These symptoms *are* the immediate compensation for the damaged instincts. There is no destruction, but only an isolation from the normal integration (diaspasis). As such they have *value* for the instinct. Consequently the psychoneurotic symptoms are the means the organism adopts to maintain itself at the optimum state in the face of insult.

If an instinct cannot maintain itself at the noohormetria stage, it regresses to the more primitive hormetria and finds compensation by the psychoneurotic symptoms. At the same time the primitive, personal type of reasoning (causalité agglutinée) is at work. The symptoms are attributed to organic disorders instead of to the damaged instinct.

Yet reasoning as a whole is not affected, as is the case in schizophrenia. The predominance of causalité agglutinée in psychoneuroses does not transgress normal limits. There is still possible a resolution of the causalité agglutinée to the causalité racine-branche, to result in cure (insight). The damaged instinct must be restored to its adult development, or else another instinct must take on added compensatory value. The spontaneous occurrence of such cures (apart from psychotherapeutics) exemplifies the delayed action of syneidesis (as opposed to the immediate action which *produced* the symptoms).

If we examine schizophrenia, as an example of the psychoses, it is the destruction of the intellectual functions which is most striking. Schizophrenia, like the psychoneuroses, is an affection of the instinctive life. Why, in the one case, the intellectual functions should be only slightly modified, and in the other gravely disturbed, would be the answer to the problem of the psychoses, an answer which has not yet been found.

In schizophrenia there is, of course, marked disintegration to more

primitive levels. Monakow speaks of the "polarization" of instinct. This concept he does not clearly define, but it seems to mean the monopoly of all available energy by the effort of the injured instinct for compensation. Since, because of the injury, life at the normal level becomes impossible, certain retrenchments are made, certain barriers thrown up. There is a regression to certain infantile modes of reaction, secondary to this polarization of the instinct. Reasoning (causalité) is reduced to the fragmentary form (the elements of the mature causalité agglutinée). Correspondingly the instinctive manifestations are reduced from the noohormetria form to the hormetria. Orientation ceases to be impartial and is subservient to the injured instinct. Projections (ideas of persecution) are made on the basis of causalité agglutinée.

The difficulties involved in the study of schizophrenia are so great, the types so varied yet the differences so indistinct, that Monakow's discussion leaves much to be desired. He traces the regression to primitive levels of the instinctive manifestations and of the thought processes, he establishes the etiology of the instinctive sphere, he traces, not with entire success, efforts of compensation on the part of the organism; yet we are not left with a finished picture. The difficulty, however, is inherent in the subject.

The final chapter of the book is in a sense the most provocative. Here Monakow discusses certain morphological correlates of the instincts. The endocrine-vegetative system has already been mentioned; in addition to this there is the "barrière ecto-mesodermique," which means the choroid plexus, the ventricular ependyma, the glial "curtain," and the physiology of the cerebrospinal fluid. Monakow believes that the psychoses and psychoneuroses—the disturbances of the instincts—are accompanied by impairment in the efficiency of this barrier. He presents histological evidence that in the psychoses the only constant lesions are in the choroid plexus. Much of his other evidence is supported by intoxication and injection experiments on animals. His theory is supported by his own concept of the cerebrospinal fluid circulation.

The only difficulty is, that his work is not widely accepted here in America, however popular it may be in Europe. American workers are particularly opposed to his theory of the circulation of the cerebrospinal fluid. Moreover, his work on schizophrenic brains has found only a poor reception among American psychiatrists. The animal experiments that he quotes are not definitive, and in any case are capable of more than one interpretation. The whole field is extremely

confused; theories are only tentative, and more research is sorely needed. The ideas of Monakow are highly suggestive, but not proved.

The same criticism applies perhaps to all the ideas presented in the foregoing pages. His concepts have here received only sketchy treatment; evidence has necessarily been abbreviated; many other concepts have been entirely omitted. Yet from such of the ideas that have been presented, it can be seen that the work is really a scientific poem, rather than a rigorous interpretation of data. It gives a sketch of neurobiology, a field so vast that rigorous treatment is impossible. The erudition of the book is enormous, yet it is far from adequate. Consequently the interpretive element, the leap of imagination beyond the immediate data, is necessary to establish the correct perspective. The interpretation may not be altogether correct, but it is a noble and worth-while attempt.

In a sense the book is reactionary. It returns to concepts and modes of description that many authors would prefer to outgrow. Yet herein lies its essential value. Theories drawn from intensive study of one very narrow field, and then imaginatively applied to fields beyond their author's knowledge, are the curse of science, particularly psychology. Far, far better is this broad survey, drawn from a knowledge which few men can equal, even though the terms of description, like the terms horme or syneidesis, are merely a cloak for ignorance.

From the study of this book, there are certain lessons we cannot afford to overlook. First is the importance of the time factor in biology; second, is the importance of the instinctive life; and third, the necessity for a broad knowledge of the normal and abnormal functions of the nervous system for the fruitful study of the "mind."

The value of a scientific work lies, not in the problems it settles, but in the problems it raises. Whoever, in the biological sciences, reads this book in its entirety and does not find in some part of it new suggestions, new ideas, new points of view, will merely show his own poverty of thought.

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BOOK REVIEWS

History of Psychology in Autobiography. Edited by Carl Murchison. Worcester: Clark University Press, 1930. Pp. xvii+516.

This is the first volume of a series of autobiographies of psychologists. There are here included Baldwin, Calkins, Claparède, Dodge, Janet, Jastrow, Kiesow, McDougall, Seashore, Spearman, Stern, Stumpf, Warren, Ziehen and Zwaardemaker, a total of fifteen, of whom six are American or at least chiefly identified with psychology in America, four are German, two English, two French, one Swiss and one Dutch.

The need of such a series was made apparent when the author of a recent history of experimental psychology found it impossible to get necessary material except from the individuals themselves. As a result Murchison, Boring, Bühler, Langfeld and Watson coöperated in choosing names appropriate for inclusion in such a compendium. Four volumes will have appeared in the near future, and others will be issued thereafter at intervals so long as the project seems to be fruitful.

These are good reading and give one an impression of intellectual preferences and lines of development of these psychologists as nothing else could. Many of them are exceedingly frank, in fact these Lives range all the way from a complete objectivity to an autopsychoanalysis that is almost brutal and conceals little.

Certainly it is a good undertaking, for with so many psychologists working on so many frontiers we need all the perspective that we can get to help us determine, from the direction from which we came, somewhat of the direction in which we are going. And nowhere else would one find this type of historical material. Good luck to the venture!

FLORENCE RICHARDSON ROBINSON.

New Haven.

The Psychological Exchange. Edited by James Hargan and Normal Powell. Vol. 1, No. 1, April, 1932. Published bi-monthly by the Psychological Exchange, 507 Fifth Avenue, New York, N. Y. Annual subscription rate $3.00.

The Psychological Exchange, according to its editorial in the first issue, is expected to function "as a national bulletin board and as an

integrating medium" for professional psychologists. The success of the venture is predicated on the coöperation and support of those whom it is designed to serve. The quoted comments indicate that it has already received wide endorsement. The first issue contains news from 17 laboratories, particularly in reference to theses in preparation. Delays in publication make such announcements of research in progress extremely useful to the profession. Articles are concerned with the certification of psychometrists, the legal definition of the psychologist, the standardization of school psychologists, and the like. Provision is made for notices submitted by those seeking placement. New books are listed. *The Psychological Exchange* bids well for a unique place among the psychological journals.

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WOODWORTH, ROBERT S. *Contemporary Schools of Psychology.* New York: The Ronald Press Co., 1931. Pp. vi+232.

A chapter is devoted to each of the following Schools of Psychology—Existentialism, Behaviorism, Configurationism, Psychoanalysis, and Purposivism. This treatment is prefaced by a chapter on the general historical background from which these schools developed. The final chapter is entitled "The Middle of the Road," in which the author by means of citations emphasizes the fact that the great majority of Continental and American psychologists are not attached to any school. The author aligns himself with this middle-of-the-road group whose members propose to choose from each school that which they deem to be good and to reject that which they regard as of no value.

The treatment is primarily expository in nature. The author attempts to depict in a straightforward matter-of-fact manner what he regards as the central and fundamental doctrines, tenets, and assumptions of each school, together with its important contribution to psychology. The author does not hesitate to evaluate here and there, and the critical comments are usually concise and to the point but friendly in spirit. The treatment suggests wide reading, keen analysis, an impersonal attitude, fair-mindedness, sympathetic insight, and kindly judgment. The tone of the entire discussion is distinctly refreshing in view of the acrimonious, vituperative, and propagandistic character of much of this literature.

The schools are depicted primarily as revolts against the established order as it existed in 1900. The psychology of this period is briefly characterized in the first chapter. Psychology is a young

science which developed from many sources. There is the heritage from philosophy and associationism. The experimental procedures and attitudes developed from physics and physiology. The concept of elements and their combinations was borrowed from chemistry. Darwin and Galton were responsible for the introduction of biological concepts. Psychiatry was extremely influential. All of these factors had not been synthesized into a systematic whole. There were conflicts and incongruities, and theory, system and definition were out of step with actual practice. This historical method of exposition is to be commended. These schools can be adequately understood only in terms of their historical antecedents, and such a treatment is also conducive to a more sympathetic appreciation of their contributions.

The book contains much that is interesting and suggestive. As an illustration we may cite the analysis of Freud's psychology, in which the author separates the fact from the theory in Freud's doctrines and further analyzes out the fundamental assumptions underlying these doctrines. This represents a type of constructive analysis that is much needed in this field.

The book is distinctly worthwhile. It will find a wide use as supplementary reading, and it can be used to advantage in advanced courses as an introduction to the controversial literature of the subject.

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HOLLINGWORTH, H. L. *Abnormal Psychology. Its Concepts and Theories.* New York: Ronald, 1930. Pp. xi+590. $4.50.

Professor Hollingworth in this volume has extended his *redintegration* theory of mental life to include the concepts and data of abnormal psychology. Whether or not the theory of redintegration is acceptable and however the adequacy of this particular treatment of abnormal mental processes is judged, the author is to be congratlated for his courageous and consistent organization of a large mass of both normal and abnormal data under a single set of assumptions and hypotheses. The internal organization of the book is clear and the plan is logically coherent.

The preface and the first chapter supply the necessary definitions. The second and third chapters summarize the historical background. Chapters four to seven comprise an analysis of contemporary viewpoints, and the remainder of the book is allotted to considerations of abnormal psychology proper.

In discussing the meaning of "abnormal" Professor Holling-

worth says (p. 14): "It is a common human trait to take the familiar for granted, and to demand *explanation* for the unusual or 'abnormal.' We shall throughout this book have occasion to emphasize just the reverse of this attitude." This promise is made good—so good in fact that sometimes the reader wonders whether the volume is actually a textbook of abnormal psychology or whether it is a defense of "redintegration" in normal psychology.

Those psychiatrists who feel that their experience with psychopathic patients equips them with a special knowledge of psychology, may perhaps find support for their untenable position in Professor Hollingworth's observation that (p. 20): "Extreme or even mild deviations from normal give to mental phenomena the same sort of magnification as that which the microscope and telescope contribute in the other sciences." Abnormal psychology has always promised to normal psychology this sort of assistance. Unfortunately the phenomena of abnormality, even though they may be interpreted as exaggerations or diminutions of normal processes, are qualitatively so different from the normal in the organization of their patterns, and the interests of the observers of the abnormal processes are so divergent from the interests of the scientific psychologist that little light has been thrown on normal psychology by most of the old studies of abnormality. The "telescopic-microscopic" analogy is of doubtful value at best, and so far as the reviewer knows it has never been used to its best advantage.

No practicing psychiatrist or abnormal psychologist should fail to read the splendid summaries of the psychological implications of the Kraepelinian and Freudian theories. The sympathetic treatment of the efforts to apply Wundt's psychology to the study of psychoses makes the half forgotten work of the Kraepelinian psychiatrists appear almost modern. The severe criticism of the Kraepelinian system for its emphasis on classification loses cogency by the description of that system as an attempt at genuine psychological analysis.

Professor Hollingworth suggests the term "psychoanalogical" to take the place of "psychoanalytic" as designating certain psychiatric theories which have been popular recently. The suggestion that this substitution be made will probably not be carried out generally. The present tendency of the psychoanalytic school is rather to identify the term "psychoanalytic" with the terms "psychiatric" and "psychologic." Perhaps psychologists should be flattered rather than resentful at the use of the term "psychologic" to identify the hodgepodge of metaphysics and magic comprising the psychoanalytic tech-

nique. Whether or not Professor Hollingworth's suggestion is accepted, the fact remains that psychoanalogical is one of the best terms yet devised for the identification of that particular system.

In his treatment of the Freudian and other psychoanalytic systems, Professor Hollingworth omits only one serious criticism. The psychoanalogical enthusiasts share with various religious fanatics the tendency to eliminate competition and opposition by every possible device. The author's treatment is fair and unemotional, hence inclusion of this characterization might have weakened the effectiveness of his treatment, but the criticism is important nevertheless. In many quarters the weight of psychoanalytic professional prestige has publicly favored the definition of psychology exclusively in terms of mental testing, plus whatever else a college graduate may derive from an apprenticeship in clinics dominated by the psychoanalogical viewpoint.

The selection of case material is throughout discriminating and comprehensive. It is interesting to note, however, that Professor Hollingworth despite his originality has followed a bad precedent. Abnormal is defined in terms of the deviation from a central tendency, but the selection of case material is clearly based on categories which are primarily *pathological* in the medical sense, and which only incidentally imply deviations from a central tendency.

The book would have been clearer to the reviewer if, instead of translating the classifications of mental pathology into Professor Hollingworth's vocabulary, the various abnormalities had been selected and discussed throughout in terms of the author's categories.

The selection and use of the case materials of other writers is always to be deplored. It is true that Professor Hollingworth uses borrowed material only to illustrate the applicability of his redintegration theory, but even so, the argument loses in value by the reanalysis of old cases.

It must be remembered that the classic cases were selected partly according to the biases of the older writers and it is certainly true that they were described in terms of those biases. Reanalysis of cases described in the literature can serve only to perpetuate errors in observation and to divorce abnormal psychology from observation of real people. Professor Hollingworth's experience with abnormality is undoubtedly wide enough, and his insight is obviously full enough to command the respect of any reader, without the introduction of a single classical case. Case descriptions in the present condition of abnormal psychology must serve only to illustrate a difficult explana-

tion and under no circumstances should old histories be used as bases for new interpretations.

On the whole Professor Hollingworth's book gives the impression that abnormal psychology is actually making progress. The book is interesting without concessions to the spectacular. It is scholarly without being pedantic. It is certainly the appropriate text-book in abnormal psychology for students whose elementary training has been in Professor Hollingworth's system.

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Scheerer, Martin. *"Die Lehre von der Gestalt." Ihre Methode und Ihr Psychologischer Gegenstand.* Berlin and Leipzig: Walter de Gruyter and Company, 1931. Pp. 405.

This scholarly work attempts to evaluate critically the whole Gestalt movement and deals particularly, as its subtitle indicates, with the Gestalt method and the object which Gestalt psychology investigates. The book is rather unique in two ways. As far as I know at least, the whole Gestalt problem with all its implications has never been so exhaustively treated between two covers. Secondly, Scheerer's position (the work comes from W. Stern's Institute in Hamburg) is neither that of the avowed propagandist for the theory, nor that of him who damns with faint praise. He sees the great importance of the doctrine of the Gestalt and its wide implications, yet he has, as we shall see, at least one very important bone to pick with its adherents. He is admirably fitted for his task. He knows virtually all the Gestalt literature, the most important previous criticism, and to boot, is thoroughly versed in the contemporary continental philosophy of science and metaphysics.

What is the chief impression this work is likely to make on the American experimental psychologist at the present time? Carefully read, it should convince him that the Gestalt theory cannot be ignored; that it should be studied in all its ramifications. In brief Scheerer finds the Gestalt doctrine *new* and, if one makes certain reservations concerning the object with which it deals, *true*. (Previous criticism has usually found it either not new or not true, and in some hands neither new nor true.) I shall review briefly Scheerer's positive presentation of the Gestalt doctrine, and deal at more length with his most important criticism.

Most psychologists know by this time that the Gestalt problem in its modern form was raised by v. Ehrenfels in the '90s of the last century. The problem first came into its own for psychological

research, however, around 1910. At the present time practically all German psychology has something to do with the Gestalt problem. To give only two examples—the Leipzig School (Krueger, Sander, *et al.*) and the Komplexen theorie of G. E. Müller are both attempted solutions. Scheerer sees in his introduction that such attempts will not suffice. Müller remains at heart an atomist, Kreuger uses the Gestalt concept simply as an *ad hoc* hypothesis to support the traditional Wundtian psychology. On the other hand, the Berlin-Frankfurt School (Wertheimer, Koehler, Koffka, Lewin) has really seen the implications of the new problem. Hence, it is with this school that Scheerer's book is primarily concerned.

When I first heard of the Gestalt theory in an undergraduate course in psychology in 1924, it was supposed to be a new (although not particularly scientific) way of explaining optical illusions. If some American psychologists are so impressed, let them read Scheerer's book. The time seems past when the Gestalt theory can presumably be refuted by showing that Wertheimer's phi phenomenon is really due to eye-movements, or even that Koehler's physical Gestalten are not really physical at all. The Gestalt theory has grown to cover not only all sorts of specifically psychological problems, but has made itself felt in physics, in biology, in sociology, even in comparative philology. The Gestalt method is a new, a valid, and extremely useful instrument for investigating almost all of the problems with which scientists have to deal. Approximately the first half of Scheerer's work is taken up with an exposition of the Gestalt method and a demonstration of its applicability and validity.

The second half of the book is critical and serves particular study. I said above that Scheerer has a bone to pick with the adherents of the Gestalt theory. Is it that the Gestalt theory is metaphysical, mentalistic, vitalistic, not scientific in the best sense of the word? Not at all. Believe it or not, Scheerer's complaint is specifically the inverse of this, namely, that the psychological subject-matter which the Gestalt method investigates is so objectified, so much a branch of natural science that the Gestalt theorist loses track of the prime psychological problem, *i.e.*, the investigation of the unitary, active, subjective ego. In brief, Gestalt psychology is a form of behaviorism, a psychobiology. Scheerer takes Koffka's definition of psychology as the " Wissenschaft vom aussern und innern Gebaren von Lebewessen " and attempts to show that although Gestalt psychology pretends to handle all psychological problems that it does not adequately treat of the subjective ego. He limits the validity of the

method to the sphere of biology, and claims that *the* psychological problem remains untouched. Gestalt psychology is then a behaviorism; to be sure a behaviorism based on a less naïve epistemology than Watson's and on a more fruitful and generally valid methodology. Anyone who has carefully read only Koehler's "Physische Gestalten" and Lewin's program papers to his "Untersuchungen zur Handlungs-und-Affektpsychologie" will, I am sure, agree with Scheerer on this point. Paradoxical as it may seem much recent criticism has attacked Gestalt psychology for not being exactly what it is, Scheerer's demonstration is, I believe, convincing. In the space at my disposal I would rather not try to criticize Scheerer's critique. It would be possible to question the existence of a subjective, active, unitary ego. It would be possible to drag in all sorts of well known arguments about the possibility of dealing with it scientifically, does it exist. Of more immediate importance for experimental psychology is the following consideration: Grant that Gestalt psychology is a psychobiology, what can it do as one? I believe that we in America have pinned our faith on the hope of a psychobiology. If, as Scheerer is ready to admit, Gestalt theory is a new and valid way of treating the problem of organisms in environments in a systematized science, and I believe it is, we have made a great step forward. If as Lewin suggests in his recent paper (The Conflict Between Aristotelian and Galileian Modes of Thought in Psychology, *J. Gen. Psych.*, April, 1931), we may soon be able to expose this science in terms of a systematized functionalism, psychology will come into her own and will gain scientifically the dignity that befits her subject-matter. One must not forget, however, that even if the plans are drawn, the building is far from completed. Koehler himself in the preface to his "Gestalt Psychology" realizes this. Perhaps when this psychobiology is systematized, when more unknowns are replaced by constants, a sort of *Übergestalttheorie* will arise that will also make more of the subjective ego. Scheerer thinks this will be necessary, realizing at the time the great importance of what has already been accomplished.

The book contains the usual index, and a fairly complete bibliography through the year 1926. Finally, the printing is beautiful, but the book is so poorly bound in the paper covered edition that it did not stand a single reading. Libraries would do well to order the bound edition if this important book is to receive the study is deserves.

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ELLIS, WILLIS DAVIS. *Gestalt Psychology and Meaning.* Berkeley: The Sather Gate Book Shop, 1930. Pp. xi+172.

This study of meaning is "not an *ex cathedra* revelation but a serious attempt to peer closely into a typical problem through the spectacles of Gestalttheorie." Before peering into his problem, Dr. Ellis has found it necessary to construct his spectacles and has made a very good job of it. That is, he gives an historical and critical review of the development of gestalt psychology that shows a thorough and scholarly acquaintance with the literature and at the same time lacks all of the misapprehensions of most of the commentaries by foreign critics. For this reason the book will have some use as introductory reading toward an understanding of gestalt psychology. This use will be furthered by an excellent lexicon that contains most of the terminology peculiar to gestalt psychology.

In a brief review one cannot do justice to the logical structure of his theory and the care with which it is built. The following lines attempt to indicate very briefly what the theory is. Dr. Ellis starts from the standpoint of purposive behaviorism (Holt, Hunter, Tolman) which he accepts, but attempts to carry further by giving "sufficient emphasis to the sub-behavioral activity of the phenomenal field" which investigations by gestalt theorists have shown to be subjective to laws of organization. He will discuss meaning only in terms of behavior. However, between stimulus and response is the phenomenal field, the underlying processes for which are of a gestalt nature. The phenomenal field symbolizes stimuli and is symbolized by behavior. The behavioral process by which we arrive at meaning (itself undefined) is that of ascription. To ascribe character to the environment is to symbolize phenomenal field equivalents by behavior equivalents. Only as behavior symbolizes the phenomenal field is any clue to the phenomenal field provided. The gestalt theory has shown that there is a close correspondence between stimulus, phenomenal field and behavior. It has further shown that the laws for the behavior of the phenomenal field are laws of organized wholes. This organization has its basis in the self. Hence, "The world we 'enjoy' is made by us into our world." Dr. Ellis recognizes this as anthropomorphism and defends it as such.

One may well compare this viewpoint on meaning with the various viewpoints and definitions of other authors that Dr. Ellis has assembled for us in his book. (The definitions of meaning range from incipient motor act to act of God.) It cannot be denied that by his careful, although sometimes labored, analysis of the

problem, Dr. Ellis has successfully erected a logical theory of meaning on the basis of gestalt psychology.

Whatever Dr. Ellis' training has been, his attack on the problem of meaning remains essentially that of a philosopher. (This may not be his choice. Probably at the moment "meaning" will yield only to a philosophical attack.) What the effect of such theorizing on experimental psychology as a biological science will be, remains to be seen.

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WARREN, HOWARD C., and CARMICHAEL, LEONARD. *Elements of Human Psychology.* Revised and enlarged edition. Boston: Houghton Mifflin, 1930. Pp. ix+462.

"In this edition, as in the previous one,[1] the effort has been to recognize the contributions of both the introspective and behavioristic methods to psychology. The treatment of certain topics in this edition has been definitely influenced by the *Gestalt* or Configuration standpoint in psychology. Fundamentally the authors have attempted to maintain the view that psychology is a biological science and that a knowledge of the structure and function of the living organism is basic to a true understanding of mental life." (Preface.)

The new material on individual differences, language, social psychology has been added to a text which continues to be predominantly concerned with physiology, sense-perception, and subjective analysis. Of the 118 figures in the text there are but 19 which do not refer to anatomy, physiology, or sense-perception. There are 19 tables in the text and appendices, of which 13 are classificatory schemes. The six others give quantitative facts, there being one table each on vision, taste, the Weber constant, response time, learning, and individual differences.

The Gestalt school contributes the phi-phenomenon, figure-ground relationships, the insight experiment. But the older interpretations are but little modified. Figure in the figure-ground experience is identified with clearness. Insight, illustrated in a figure from Köhler, is defined as the influence of past learning on present learning.

Abundant references are given at the end of each chapter. There are a number of exercises and teaching aids. The index includes a brief dictionary of psychological terms.

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[1] See review of first edition by F. O. Epprecht, PSYCHOL. BULL., 1923, 20, 478–480.

WHEELER, RAYMOND HOLDER. *The Science of Psychology.* New York: Thomas Y. Crowell Co., 1929. Pp. xvii+556.

Readings in Psychology. New York: Thomas Y. Crowell Co., 1930. Pp. x+597.

Wheeler's "The Science of Psychology" is epochal in that it represents a first attempt to apply configurational and organismic principles to psychology in general. The author's attitude, as expressed in the preface, is that modern writers err on the side of simplicity and brevity and that psychology is being devitalized by an adherence to old problems and theories, and at times by adherence to obsolete data. Instead of selecting particular psychological data which tend to verify the theories he is fostering, this author pretty well covers the field of general psychology and frankly faces the controversial issues which inevitably arise. This end is accomplished by describing certain behavior, stating the various orthodox explanations, ofttimes tracing through the history of a given problem, and then applying and justifying his own explanation. In so doing he includes much historical material and in addition draws heavily upon recent experimental literature.

The principles of configuration are applied consistently throughout the book, even to its organization. Opening with social behavior in its various aspects, it continues with chapters on intelligent behavior, emotive behavior, learning, simple reaction, space perception, various sensory modalities, the nervous system in its relation to behavior, and then, for a closing chapter, a summary of configurational and organismic interpretations. Extensive references to both theoretical and experimental literature and a combined glossary and index add greatly to the usefulness of the book.

"Readings in Psychology" is designed to provide material supplemental to the other book. Its organization corresponds so that the two may be read concurrently. Included in the readings are special chapters by the author and by Helson, Metfessel and Cutsforth, and selections from the writings of some twenty other American authors. Here, more than in the other volume, material has been selected which is consistent with the theoretical bias of the writer, though in many instances the authors quoted have in no way aligned themselves with the configurational school. Furthermore, but for the editorial notes preceding each contribution, much of this material would fail to show configurational or organismic implications for the average reader. As in the companion book there are useful glossaries and references for additional reading.

The most outstanding shortcoming of the Readings is the absence of any of the original work of Wertheimer, Koehler, and Koffka. While it is true that Wheeler has leaped ahead of these men, going as far in the application of configurational principles as they "hoped to go," nevertheless it remains a fact that the movement is primarily of German conception and there is not yet an American offspring beyond the nursing stage.

In surveying the two books together one frequently feels that the author has made his task simpler than it really is. Some of the laws which float under the configurational banner still lack great specificity. Their too early application to any and all psychological phenomena tends to weaken and reduce their significance. This does not detract from Wheeler's contribution in so splendidly surveying general psychology in the light of the more recent theoretical and experimental developments and in demonstrating the broad and varied applications to which the organismic and configurational principles can be turned. It does, however, raise a question as to what effect such efforts may have upon the future of the configurational movement.

These books are splendidly adapted for class room use, not only full year beginning courses, but also for reference in more advanced courses where controversial issues receive greater stress.

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TROLAND, LEONARD T. *The Principles of Psychophysiology.* New York: D. Van Nostrand Company, 1930. Pp. xxi+397.

This book, which forms Volume II in the series of four projected volumes under the title of "The Principles of Psychophysiology," continues the careful exposition of this system in the previous volume and treats under Part Four the subject of *sensation: consciousness and the afferent arc.* It is presented as Chapters XIII–XIX inclusive of the larger work together with a section of notes, a continued bibliography, and a separate index. The scheme of arranging the bibliography with a numerical citation continuous with that of the first volumes becomes increasingly cumbersome as the volumes proceed, since each item constitutes a footnote reference and leads in many cases to a repeated citation of the same book. It is difficult, in other words, to locate the authors referred to because these citations do not reappear under the authors' names in the index.

The first chapter gives a very thorough treatment of the concept of sensation with considerable insight into divergent theories and a

constructive evaluation of the more generally accepted points of view. Ingenious diagrams illustrate current notions concerning the afferent arc and the physical basis of neural impulses. Experimental results concerning such matters as the all-or-none theory, chronaxy, and the du Bois-Reymond law are cited. The emphasis between synaptic action and the action of the network as a whole is very carefully placed.

Chapter XIV finds the author very much at home in the field of visual sensation. It gives a succinct summary of material that has been heretofore less accessible to advanced students. After a short discussion of visual sensation under the division of monocular and binocular effects, the author proceeds to discuss the three fundamental attributes of brilliance, hue, and saturation. He makes a distinction, however, between saturation and chroma, which latter term is a collective attribute for those colors that do not belong in the gray series. Brilliance as an attribute refers chiefly to the achromatic series but can also apply to the chromatic values. A number of items like visibility, the Purkinje effect, flicker, and fusion are psychophysically treated. There is also a section on the anatomy and physiology of the eye-ball together with a photochemical treatment of adaptation, contrast, and similar phenomena. The laws of color mixture are illustrated in terms of a triangle which is referred to a solid of three dimensional coördinates. In this way the author is able to overcome the usual difficulty of finding a pure wave-length for each of the complementary colors. The primary stimuli are plotted for values in the neighborhood of B, 460 $m\mu$; G, 530 $m\mu$; R, 650 $m\mu$. The author believes that the Young-Helmholtz, the Hering, and the Ladd-Franklin theories are out of touch with modern neurological doctrines. "In order to render them at all realistic, we must put them 'in modern dress'." He, therefore, proposes a three-component theory in modern form. This supposes three species of cones scattered more or less uniformly over the retina. "When the three kinds of cones are stimulated by radiant energy having the composition of sunlight, the long-wave cones (for red) yield a lower frequency than do the mid-wave ones (for green), while the short-wave cones (for blue or violet) generate a very low frequency . . ." After discussing the Hering theory he expresses his preference for the more plausible revised Young-Helmholtz theory. The Ladd-Franklin theory requires three types of variables to be transmitted along a single nerve fiber. While such may be a possible interpretation in the future, present knowledge does not warrant its accept-

ance. The author leaves the way open, however, to more intensive experimental research regarding all of these theories and in fact encourages them.

In Chapter XV the author next makes a careful study of auditory sensations. Such matters as loudness, pitch, brightness, and volume are treated in detail. One would wish that here more authority were asserted in clearing up controversial positions which are frequently left in suspense. If the reader is at all versed in the field, he is bound to have this attitude, especially when such subjects as summation tones and consonance are scanned. For the amount of material available the chapter seems frightfully condensed and inadequate. Even in the matter of the function of the auditory sense-organs, which is served by some very useful diagrams, one fails to find the same well-tempered treatment that was displayed in the previous chapters. On the other hand, there is a preponderance of information from the physical angle which will help advanced students who wish a simple introduction to some of the more recent investigations.

We come then to Chapter XVI which summarizes the facts concerning chemical senses including the olfactory and the gustatory departments. There is a good summary of work on the newer classifications but one misses a Henning prism in the olfactory section and any reference to his work in the field of taste. The author in part makes up for this defect by offering the diagrams in the section of notes at the end. There is an introduction to Head's theory of protopathic and epicritic sensibility at the beginning of the next chapter which deals with the cutaneous groups. The author then passes on to a criticism of the classification and gives a summary of many of the newer experiments in the field of temperature, stimulation, and touch. It is difficult to understand, however, why the work of Cutolo and the Titchener touch pyramid were not included even though they have only tentative status. There is a good discussion of the sensory end-organs and a number of short sections on such questions as adaptation, positive after-effects, tickle, and spatial and temporal patterns.

The closing chapters deal with the kinaesthetic and internal group of sensations. While the author correctly infers that the semicircular mechanism functions adequately physiologically but very meagerly through the channels of sensation, he gives relatively more space to the physiological aspect than to such experimental results as were obtained in aviation during the war. The last chapter is mostly a summary of the book.

One finds throughout the book a scholarly treatment of subjects which properly come under the several headings. Occasionally the reviewer could wish for an easier style. Words are frequently heaped up in a confusing manner. The book, however, brings together in one systematic treatment material which is not available to our advanced students elsewhere. While one may not agree with the author's interpretation or emphasis at all points the presentation is not overburdened with prejudice from some one persistent theory which the author wishes to propound to the world. At the present stage of psychology we need more systematic works of this sort. The professional psychologists and the increasing number of graduate students would do well to peruse this work with great care.

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MURCHISON, CARL (Editor). *A Handbook of Child Psychology.* Worcester: Clark Univ. Press, 1931. Pp. xii+711.

With the assertion that "one-half of the whole field of psychology is involved in the problem of how the infant becomes an adult psychologically," the editor justifies this latest addition to the International University Series in Psychology, *The Handbook of Child Psychology.* In spite of the significant word "becomes," which occurs in the assertion, the editor has limited the field of his enterprise, more as the volume title suggests, in terms of the species and age of the subjects to be studied. The task set for himself seems to have been one of surveying child psychology rather than genetic psychology, of selecting not from the point of view of any system but in an eclectic manner. He appears, furthermore, to have been concerned with forestalling the critical cries of factions in the field, allowing, as he does, representation in the volume to certain national and institutional groups as well as those wedded to specific systems of psychology.

Twenty-two authorities of varying interests and points of view have accordingly been induced to review not sections of a logically divided field but segments in which, in keeping with one classification scheme or another, some of their own major investigations in psychology fall. That a more brilliant galaxy of stars could not be found, let the following list of authors testify: John Anderson, Charlotte Bühler, Anna Freud, Arnold Gesell, Florence Goodenough, Leta Hollingworth, Susan Isaacs, Harold Ellis Jones, Mary Cover Jones, Vernon Jones, C. W. Kimmins, Heinrich Klüver, Kurt Lewin, Helen Marshall, Dorothea McCarthy, Margaret Mead, Joseph Peterson, Jean Piaget, Rudolf Pintner, Lewis M. Terman, Beth L. Wellman, and Helen T. Woolley.

The reader familiar with these authors could probably predict the specific nature of their contributions to the Handbook. He could also surmise the difficulty of piecing these chapters together into a well integrated whole. The subsequent mention of a few of the 22 chapter titles, with the intent of suggesting the scope of the presentations, will, doubtless, provide convincing evidence that the array is a motley one: The Methods of Child Psychology; Eating, Sleeping, and Elimination; Order of Birth in Relation to Development; The Developmental Psychology of Twins; Learning in Children; Children's Plays, Games, and Amusements; Children's Dreams; Psychoanalysis of the Child; The Eidetic Child; and The Primitive Child.

Lack of focus, overlapping, and an allotment of space which does not reflect the relative importance of the issues dealt with are among the inevitable results of a plan such as eventuated in the Handbook. The latter limitation of the volume is, from one point of view, serious, for many of those issues, which because they cut across the various segments are fundamental, are minimized or scarcely mentioned. Little effort, for example, has been made to illuminate such basic concepts as mental inheritance, maturation, growth, reflex, motive, value, space perception, etc., by the pertinent materials in the field of child psychology. So disappointing is this failure to marshal findings in any extensive fashion about most vital theoretical concerns, the reviewer suggests that the editor supplement the present volume by one on the contributions of child psychology to fundamental questions of theory in general psychology. Some organization of the material in the field to make clear the trend of developmental sequences seems also highly desirable.

If one accepts the editor's formulation of his task, then he has earned generous praise, for he has chosen capable contributors and forced the sinking of shafts into the most promising elevations in the field. One might question, however, why the very respectable mass of material on the behavior of the new-born was not brought together into some sort of unified picture; or why, when there are chapters on the feebleminded, eidetic, primitive, and talented child, there are none on the psychopathic or delinquent. Of course, since no creatures of these spheres should be expected to delimit the field of child psychology or to select from it so as to escape the objections of carping reviewers, the aforementioned queries should not be taken as essentially derogatory to what is an excellent piece of work.

Since space will not permit an evaluation of each author's contribution, we shall attempt merely to characterize or classify some of the approaches shown in the various sections of the compilation. The

contributors to the Handbook have apparently interpreted their instructions very differently. The consequence is a series of discussions of very uneven merit—of chapters in which the major purposes differ widely. Naturally some of these differences must be functions of the investigations in the specific field assigned; but it seems unlikely that this latter factor is provocative of the gross variability in focus noted. Some of the authors present highly critical analyses of the literature concerned with the field segment designated as theirs; these writers evaluate and integrate. Some, on the other hand, describe in painstaking detail appropriate studies but evaluate little; their contributions are largely concatenations of abstracts. Still others expound merely their own programs for attaining certain objectives, supporting their philosophies principally with anecdotes. Illustrations of the first, second, and third types, respectively, may be found in the following chapters: The Order of Birth in Relation to the Development of the Child; The Social Behavior of the Child; and The Experimental Construction of an Environment Optimal for Mental Growth. It is unfortunate that the first type is rather rare, the second type predominating, when presumably the chief functions of a handbook are to portray the scope of enlightening data, to call attention to the pitfalls in method, and to shape the most significant details in the view into some sort of pattern.

Although pledged not to weigh specifically any one division of the work, the reviewer feels justified in mentioning one point which was brought to the fore in one of the more scholarly of the chapters—that on the learning of children. This section gleaned its material not to any marked extent from the literature of educational psychology which is so rich in suggestions but rather primarily from those laboratory studies in pure experimental psychology which have chanced to use a few children as subjects. The learning of ball-tossing, card-sorting, the maze, digits, the cancellation of a's, etc., seem to receive an undue share of attention. This leads one to infer that the effect of what is learned upon the pattern of the generalizations ultimately reached is believed to be of little moment. Although, doubtless, the contributions of the older laboratory studies should not be minimized, some heed may well be given to the critics' cries when they insist that what we want most to know about is the behavior of children in distinctly human situations.

To summarize: Since the volume is in many of its sections encyclopedic, it will probably be more useful as a reference book than as a text. As a reference or handbook, it is conspicuously

superior to any other work at present available in the field. It is scholarly and should do much to win for the field of child psychology the respectful attention of many whose attitude has heretofore been one of patronage. Its bibliographies are very valuable; its surveys broad and detailed; and its indexes, both subject and author, sufficiently inclusive to make easy the location of small items in the 700 closely printed pages. The format of the volume is the excellent one characteristic of the series to which the work belongs.

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MORGAN, JOHN J. B. *Child Psychology.* New York: Richard R. Smith, Inc., 1931. Pp. viii+474.

This book presents the subject of child psychology clearly and logically for the undergraduate student. The chapter headings will give a fairly accurate indication of the book's scope: Methods and Objectives of Child Study, Infant Behavior, The Child's Adjustment to His Family, Motor Development, Emotional Development, Motivation, Development of Meanings, Imagination, Language, Verbal Learning, Thinking and Working, Play, Social Development, Intelligence, The Integrated Child. The emphasis throughout the book is on problems of the child's adjustment to his environment and the author's particular interest in these topics is shown in the meager references to other writers in the sections on the Integrated Child, Ambitions, and so on, whereas other parts of the book are crowded with extended quotations.

The more advanced student will regret at times that only one point of view of presented, only one theory in explanation of certain conditions (such as stuttering) but this very omission will doubtless make the book of greater value to the younger students. The person who is working in the field of child-training will be disturbed by some minor points. The section on sleep is less adequately handled than that on eating. Morgan implies that some degree of joy is "the normal behavior for children." Most workers with small children are constantly impressed with the seriousness of the child, with his desire to be some other age than the one which he has reached and so on. If Dr. Morgan means average or usual by "normal behavior" then he must give a wider connotation to "joy" than that commonly accepted. Under "social value of emotions" he implies that if an infant cries five minutes before feeding time, the mother will be teaching him to cry whether she feed him immediately or waits till the proper time. The preceding paragraph, to be sure, has told us

that any pleasant result will teach the child to continue crying, but if the book is to be used as the author suggests in the preface as a "source book of information for parents," such sections as this one on crying would certainly leave the poor mother feeling that whatever she did would be wrong. Granting that many children develop without any seriously prolonged period of "negativism," few workers could agree with the author that "it is indicative of wrong treatment when the child must get negativistic in order to (assert himself)."

Such criticisms must not be taken to indicate that the book is full of flaws. On the contrary, it is an excellent book for the undergraduate student, and the author has done a good piece of work in welding experimental results, practical applications and theoretical implications into a unified whole. The emphasis on mental hygiene adds greatly to the value of the book for the student or the parent. Unlike the old type text-book, it leaves the reader with the feeling that there are many things which he himself can do to further the adjustment of a child to his world and to prevent possible maladjustments. The sections on "Forgetting and Reasons for It," on "Teaching Children to Relax," and on "The Integrated Child" are particularly good.

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SMITH ELY JELLIFFE. *Psychopathology of Forced Movements in Oculogyric Crises.* Washington, D. C.: Nervous and Mental Disease Publishing Company, 1932. Pp. vii+219.

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EDWARD WESTERMARCK. *Ethical Relativity.* New York: Harcourt, Brace and Company, 1932. Pp. xviii+301.

PIERRE PROST. *Reéducation Psychotherapique. Controle de l'Equilibre Mental et Nerveux.* Paris: G. Doin & Cie., 1932. Pp. 138.

ERIC FARMER. *The Causes of Accidents.* New York: Isaac Pitman & Sons, 1932. Pp. 88.

NOTES AND NEWS

DR. HELEN PEAK has been awarded a Sterling Fellowship at Yale University to enable her to continue work with Professor Raymond F. Dodge on the speed of reaction of the eyelid in organisms at various phylogenetic levels.

DR. KARL M. DALLENBACH, who has been Visiting Professor of Psychology at Columbia University for the past two years, returns to Cornell University this fall as Professor of Psychology.

ACCORDING to *Science,* among those giving courses in the summer session of the School of Medicine of the University of California will be Dr. J. W. Bridges, professor of abnormal psychology of the McGill University faculty of medicine, and Dr. Mark A. May, professor of educational psychology at Yale University.

PROFESSOR F. C. BARTLETT of the University of Cambridge has been elected a Fellow of the Royal Society.

DR. LEONARD THOMPSON TROLAND was killed on May 27 by a fall from a cliff on Mt. Wilson, California. Dr. Troland is known for his research in psychophysiological optics. He has published several books on psychophysiology, and the third volume of the projected four volumes of his Principles of Psychophysiology was published last February. Recently he has been Lecturer on Psychology at Harvard University. He was the chief engineer of the Technicolor Motion Picture Corporation and in the last few years has devoted the greater part of his time to the perfection of that process. He was forty-three years old at the time of his death.